1051-H-11

Y3.N88:25/4639/V.5/PT.3

AUG 1 1988

NUREG/CR-4639
EGG-2458
Volume 5

Nuclear Computerized Library for Assessing Reactor Reliability (NUCLARR)

Data Manual

Part 3: Hardware Component Failure Data (HCFD)

COMPLETED

Prepared by D.I. Gertman, B.G. Gilbert, W.E. Gilmore, W.J. Galyean

Idaho National Engineering Laboratory
EG&G Idaho, Inc.

Prepared for
U.S. Nuclear Regulatory
Commission

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Manuscript Completed: May 1988
Date Published: June 1988

Prepared by
D.I. Gertman, B.G. Gilbert, W.E. Gilmore, W.J. Galyean

Idaho National Engineering Laboratory
Managed by the U.S. Department of Energy

EG&G Idaho, Inc.
Idaho Falls, ID 83415

Prepared for
Division of Reactor and Plant Systems
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington, DC 20555
NRC FIN A6850
Under DOE Contract No. DE-AC07-76ID01570

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ABSTRACT

This volume of a five-volume series summarizes those data currently resident in the first release of the Nuclear Computerized Library for Assessing Reactor Reliability (NUCLARR) data base. The raw human error probability (HEP) and hardware component failure data (HCFD) contained herein are accompanied by a glossary of terms and the HEP and hardware taxonomies used to structure the data. Instructions are presented on how the user may navigate through the NUCLARR data management system to find anchor values to assist in solving risk-related problems.

Volume V: Data Manual will be updated on a periodic basis so that risk analysts without access to a computer may have access to the latest NUCLARR data. These users wishing to learn more regarding the computer-based interactive search and report-generation capabilities of the NUCLARR system are referred to the other volumes in the NUREG/CR-4639 series, e.g., Volume I: Summary Description or Volume IV: User's Guide.

FIN No. A6854--Nuclear Computerized Library for
Assessing Reactor Reliability (NUCLARR)

EXECUTIVE SUMMARY

Volume V: Data Manual of NUREG/CR-4639, EGG-2458, is comprised of four individual parts. Part 1: Summary Description introduces aspects of the NUCLARR data base management system and prepares the reader for reviewing data presented in Parts 2, 3, and 4. Part 2: Human Error Probability (HEP) Estimates contains detailed information on the HEP data in the NUCLARR system on the task, cell, and functional group summary level. Part 3: Hardware Component Failure Data (HCFD) presents HCFD contained in NUCLARR; and Part 4: Summary Aggregations offers NUCLARR HEP and HCFD summary aggregations.

A human and hardware reliability analysis group (HHRAG) has been established for the purpose of preparing and processing HEP and HCFD. An external review committee meets at least three times per year to provide technical direction, quality assurance, and make recommendations for upgrades to the NUCLARR system.

The NUCLARR Data Clearinghouse, the primary interface for users of the system, is responsible for the distribution of Volume V and periodic updates of the data which are issued as change pages. The NUCLARR Data Clearinghouse also acts as a resource to answer questions, offer supplemental advice to users, and distribute NUCLARR software.

This report reviews NUCLARR coding systems and data processing procedures. It also highlights the manner in which users can employ the various parts of this volume directly or to establish anchor values for use in addressing generic safety issues. Parts 2, 3, and 4 each begin with an overview and are followed by a task flow and detailed examples on how to use NUCLARR data in order to identify HEP and HCFD rates.

ACKNOWLEDGMENTS

We wish to thank those persons without whom review and evaluation of human error probability and hardware component failure data would have been an arduous task. These include M. Groh and C. Gentillon who, in addition to the above-mentioned duties, had considerable input in deriving the hardware taxonomy and coding system. The software development, implementation, and test and evaluation were herculean efforts on the parts of G. Beers, T. Tucker, and D. Call. We also wish to thank D. Fink for her fine work on the first version of the NUCLARR system.

Thanks are also due H. S. Blackman, for his technical contributions to the NUCLARR system and management support throughout the year. Lastly, we are indebted to T. G. Ryan, our NRC Technical Monitor, for his technical input, attention, and continued support during design and implementation of the data base.

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ACRONYMS

CLCS	consequence limiting control system
CRO	Control Room Operator
EO	Equipment Operator
HEP	human error probability
HCFD	hardware component failure data
HHRAG	Human and Hardware Reliability Analysis Group
INEL	Idaho National Engineering Laboratory
IRRAS	Integrated Reliability and Risk Analysis System
LCB	lower confidence bound
MT	Maintenance Technician
NRC	U.S. Nuclear Regulatory Commission
NUCLARR	Nuclear Computerized Library for Assessing Reactor Reliability
PC	personal computer
PRA	probabilistic risk assessment
PSF	performance shaping factors
SARA	Systems Analysis and Risk Assessment System
UCB	upper confidence bound

NUCLEAR COMPUTERIZED LIBRARY FOR ASSESSING REACTOR RELIABILITY (NUCLARR)

VOLUME V: DATA MANUAL

PART 3: HARDWARE COMPONENT FAILURE DATA (HCFD)

1. INTRODUCTION

The Nuclear Computerized Library for Assessing Reactor Reliability (NUCLARR) is a computer-based data management system used to process, store, and retrieve human error probability (HEP) and hardware component failure data (HCFD) in a ready-to-use format. The NUCLARR data management system was sponsored and developed by the U.S. Nuclear Regulatory Commission (NRC) to provide the risk analysis community a repository of reliability data that can be used to support a variety of existing and developing techniques for performing reactor risk assessment. A special function, the NUCLARR Data Clearinghouse, has been established at the Idaho National Engineering Laboratory (INEL) to assist in providing users of the data management system and data manual with adequate documentation, NUCLARR computer software, expert assistance, data processing, and quality assurance functions.

The NUCLARR system is documented in a series of five volumes (NUREG/CR-4639, EGG-2458).[1-6] Volume I: Summary and Description[1] presents a general introduction to the NUCLARR system. In this document, key information regarding the organization of the NUCLARR system, structural taxonomy for the HEP and HCFD side, and on-line search and retrieval capabilities of the NUCLARR system software are presented. Failure modes, actions, plant codes, document retrieval capability, data origin and survey period are also defined for the reader. In addition, specifications for the hardware and software configuration necessary to run the NUCLARR system are discussed in detail. Points of contact for problems encountered when attempting to use the data base or when attempting to forward new data to the NUCLARR Data Clearinghouse are also included.

Volume II: Programmer's Guide[2] provides information necessary for maintaining the software programs resident in the NUCLARR system. This includes modules for adding new equipment or actions to the taxonomy matrices and software for converting raw human and hardware performance data into processed failure rate estimates with the appropriate confidence bounds and error factors. Also included are procedures for maintaining and modifying help screens, equipment and plant codes, log plot programs, and computational aggregation algorithms contained in NUCLARR.

Volume III: Data Base Management Guide for Processing Data and Revising the Data Manual[3] provides the input procedures used by the NUCLARR Data Clearinghouse for extracting suitable data from candidate source documents and entering this information into the NUCLARR system.

Volume IV: User's Guide[4-6] provides users with step-by-step procedures for locating, reviewing, and combining data extracted from the NUCLARR system. This volume also provides ad-hoc search strategies and examples of where the analyst may or may not wish to use the aggregation routines offered by the NUCLARR system.

Volume V: Data Manual is the fifth volume of a five-volume set and is meant to serve the needs of and accommodate those who do not have access to personal computers; it provides those users the means to review all data available in the NUCLARR system. Volume V is divided into four parts. Part 1: Summary Description provides the user with a top-level review of the type of data, both HEP and HCFD, resident in the NUCLARR data management system. Readers may supplement the information contained in Part 1 of Volume V by addressing Parts 2, 3, and 4 in the series: Part 2: Human Error Probability (HEP) Data; this report, Part 3: Hardware Component Failure Data (HCFD); and Part 4: Summary Aggregations. Volume V has been designed to be a stand-alone document. For analysts interested in HEP, Volume V, Part 2, provides 16 two-dimensional matrices used to determine equipment and human action codes. The analyst searches for data items by combining equipment characteristics and human actions. These codes are used to locate all related data in the data appendices associated with Part 2. Definitions for all equipment are also presented in Part 2. Similarly, the coding sequences presented in Part 3 for the HCFD taxonomy section of the Data Manual may be used to identify all relevant HCFD for a particular component. Part 4 presents summary aggregations across equipment groups for HEP and HCFD.

Subscribers to the NUCLARR data base management system will receive a series of diskettes, allowing them to use the system at their own location. Minimum utility specifications require the analyst to have an IBM-compatible[a] personal computer with math co-processor, 20-megabyte hard disk, 640K of random access memory, and no auto load, sys.cache file, or virtual disk commands which reduce the 640K needed to run NUCLARR.

Any reader desiring copies of the individual volumes listed in the NUCLARR series or a copy of NUCLARR software should contact the NUCLARR Data Clearinghouse at the address listed below:

David I. Gertman
NUCLARR Data Clearinghouse
Idaho National Engineering Laboratory
P. O. Box 1625
Idaho Falls, ID 83415 USA
Telephone: FTS 583-0652; commercial 208-526-0652

Questions regarding the NUCLARR program may be directed to the address listed above or to the NRC Technical Monitor:

Thomas G. Ryan
U.S. Nuclear Regulatory Commission
Office of Nuclear Regulatory Research
5640 Nicholson Lane, NL/N-316
Rockville, MD 20852 USA
Telephone: FTS 492-3550; commercial 301-492-3550

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[a] Mention of specific products and/or manufacturers in this document implies neither endorsement or preference nor disapproval by the U.S. Government, any of its agencies, or EG&G Idaho, Inc., of the use of a specific product for any purpose.

2. ORGANIZATION

Part 1 of Volume V of NUREG/CR-4639 is organized to familiarize potential users with the NUCLARR data base management system, provide orientation for data base usage without the aid of a computer, inform users on how to identify and retrieve the data which will meet their needs, and instruct them on how to access the two types of data, HEP and HCFD, currently residing in the system. All the taxonomic information needed in order to understand how the NUCLARR system is organized has been provided in this overview.

HEP data are organized in matrices by human action; equipment being monitored, used, tested or calibrated; whether errors committed are errors of commission or omission; and whether or not the data source specifies if recovery actions have been considered in the calculation of the HEP point estimate.

HCFD are organized by equipment (component) type and failure mode. Additional coding exists, such as plant codes, normal operating state, and survey period.[a] Listings of all the HEP and HCFD sources for data currently entered in NUCLARR may be found in Section 3.3 of this report.

The appendices to Parts 2, 3, and 4 of Volume V present HEP, HCFD and summary aggregation data, respectively. As part of an ongoing effort, other data sources will be identified, processed, and, where appropriate, entered into the NUCLARR data base management system.

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[a] For readers wishing to broaden their understanding of HCFD, the following references are available from the NUCLARR Data Clearinghouse: EGG-REQ-7775, Aggregation Methods for Component Failure Data in the Nuclear Computerized Library for Assessing Reactor Reliability;[7] EGG-REQ-7742, Requirements for the Entry of Component failure Data in NUCLARR;[8] and NUCLARR Volume IV: User's Guide.[4-6]

Part 2: Human Error Probability (HEP) Estimates begins with an introduction to the NUCLARR series of reports and presents the nature of data and data structures contained within the NUCLARR system. This overview is followed by a detailed task flow for users wishing to perform a data search of HEP records contained in the NUCLARR system. The search procedure is highlighted through use of an example. All necessary tables, data identification codes, plant codes, and raw data are provided in appendices located in the back of this report. As an aid to the user, simple aggregations for task, cell, and functional group summary information have been provided as well. Users are encouraged to use subsets of HEP data in order to perform even more refined searches. Finally, users of the NUCLARR system are reminded that there will be periodic updates to the data manual and that any quantitative data that they might have should be sent to the NUCLARR Data Clearinghouse for inclusion in the NUCLARR data management system.

Part 3: Hardware Component Failure Data (HCFD) begins with an introduction to the NUCLARR series of reports and presents the nature of data and data structures contained within the NUCLARR system. This overview is followed by a detailed task flow for users wishing to perform a data search of HCFD records contained in the NUCLARR system. The search procedure is highlighted through use of an example. All necessary tables, data identification codes, plant codes, and raw data are provided in appendices located in the back of this report. As an aid to the user, failure mode codes, hardware system codes, and mechanical and electrical design codes have been provided as well. Users are encouraged to use subsets of HCFD rates in order to perform even more refined searches. Finally, users of the NUCLARR system are reminded that there will be periodic updates to the data manual and that any quantitative data that they might have should be sent to the NUCLARR Data Clearinghouse for inclusion in the NUCLARR data management system.

Part 3: Hardware Component Failure Data (HCFD) begins with an introduction to the NUCLARR series of reports and presents the nature of data and data structures contained within the NUCLARR system. This overview is followed by a detailed task flow for users wishing to perform a data search of HCFD records contained in the NUCLARR system. The search procedure is highlighted through use of an example. All necessary tables, data identification codes, plant codes, and raw data are provided in appendices located in the back of this report. As an aid to the user, failure mode codes, hardware system codes, and mechanical and electrical design codes have been provided as well. Users are encouraged to use subsets of HCFD rates in order to perform even more refined searches. Finally, users of the NUCLARR system are reminded that there will be periodic updates to the data manual and that any quantitative data that they might have should be sent to the NUCLARR Data Clearinghouse for inclusion in the NUCLARR data management system.

3. DATA QUALIFICATION

A number of parameters can be used to describe and define error probability and rate-based data. Popular examples for HEP include performance shaping factors (PSFs), task performance time, the quality of procedures, whether the errors committed where those of omission or commission, and whether there was opportunity for recovery from the error. Likewise, hardware failure rate descriptors may include such parameters as survey period, plant identification, component application, and distribution type (e.g., lognormal, gamma, Poisson). All events contained in the HCFD side of the NUCLARR system concern component failures, and all components are treated equally. The hierarchical structure merely serves to organize data.

Authors of documents reviewed to date tend to differ in what they select as descriptive characteristics of the task, equipment, and work environment and the method by which data were collected. In all cases, then, it is the user who must be the ultimate arbiter as to the quality of data and which documents should be included in a data search.

A series of stringent criteria have been introduced to ensure that data contained in the NUCLARR system are of the highest quality. Prior to the current implementation, detailed set(s) of screening procedures were developed which would allow all reasonable, quantified data a place within the NUCLARR system. The results of this effort are discussed below for both the HEP and HCFD sides of the NUCLARR data management system. Likewise, the aggregation methods and algorithms used in NUCLARR are sophisticated and have, over the past few years, undergone extensive review by outside consultants who were knowledgeable in probabilistic risk assessment (PRA) and human reliability analysis techniques.

3.1 The NUCLARR Data Clearinghouse and Quality Control

The NUCLARR Data Clearinghouse includes human factors, risk analysis, and software personnel who are responsible for all contact with users of the NUCLARR system and for providing documentation and support services for software maintenance. NUCLARR Data Clearinghouse personnel are further responsible for the distribution of user documentation, including training course documentation, and diskettes containing NUCLARR software. They also review updated versions and revised data pages for Volume V: Data Manual.

A library has been established at the Clearinghouse wherein copies of all five volumes of the NUCLARR series are maintained and kept up to date. Clearinghouse personnel also track requests for documents and ensure that requestors receive NUCLARR materials in a timely fashion. A small, personal-computer-based management system which keeps account of each new transaction has been implemented in dBaseIII+ software expressly for this purpose.

The human and hardware reliability analysis group (HHRAG) plays a major role in the NUCLARR data management process, distinct from the NUCLARR Data Clearinghouse function. The HHRAG reviews data sources for suitability and then processes those data which are qualified for inclusion in the NUCLARR system. The personnel who make up the HHRAG are experienced in one or more of the following disciplines: nuclear power plant operations, human reliability analysis, probabilistic risk analysis, system reliability, and generic safety issues. An external review committee, composed of members internal and external to the NUCLARR project team, meets three times per year tc process and perform quality assurance checks of the data resident in the system. Review committee members are selected with approval of the NRC Technical Monitor, and members serve on a rotating basis. They make suggestions as to sources of new, meaningful HEP and HCFD.

The external review committee also takes under consideration recommendations for changes or upgrades to the NUCLARR data management system, including additions to data base taxonomies which will result in more efficient processing, coding, and retrieval of data. One such recommendation recently implemented in NUCLARR calls for the addition of a log plot capability for both HEP and HCFD sides of the data management system.

3.2 Plant (Utility) Identification Codes

Codes for all plants in the United States which are used to identify data for both HEP and HCFD are listed in Table 1.

3.3 Data Sources

A variety of sources are eligible for inclusion in NUCLARR. With the exception of PRA sources, most data sources (e.g., documents or data bases) present either HEP or HCFD. An example of an HEP data source would be NUREG CR-1278, Handbook of Human Reliability with Emphasis on Nuclear Power Plant Applications.[9]" An HCFD source could be any raw, plant-specific data contained in a PRA. HCFD sources could also include generic data rates, such as those contained in IEEE STD 500, "Guide of the Collection and Presentation of Electrical, Electronic, Sensing Component, and Mechanical Equipment Reliability Data for Nuclear Power Generator Statistics,"[10] or WASH 1400, Reactor Safety Study: An Assessment of Accident Risks in U.S. Commercial Nuclear Power Plants.[11] The sections below list some of the sources and potential sources entered to date. Readers are encouraged to submit any raw or processed HEP or HCFD directly to the NUCLARR Data Clearinghouse by sending it to the address specified on page 3 of this report.

3.3.1 HEP Sources

Sources of HEP data entered to date are listed in Table 2. In addition, part of the HERAS data base, a collection of the HEP portion of 19 plant PRAs, has also been entered. Raw data from these various sources are found in appendices to Part 2 of Volume V.

3.3.2 HCFD Sources

Sources of HCFD entered to date are listed in Table 3. Raw failure rate data from these various sources are found in appendices to this document.

TABLE 1. FACILITY IDENTIFIERS

PLANT UNIT NAME	FID	PLANT UNIT NAME	FID	PLANT UNIT NAME	FID
ARKANSAS 1	ANO1	GRAND GULF	GGS1	POINT BEACH 2	PBN2
ARKANSAS 2	ANO2	HADDAM NECK	HNP1	PRAIRIE ISLAND 1	PIN1
BEAVER VALLEY 1	BVS1	HATCH 1	EIH1	PRAIRIE ISLAND 2	PIN2
BEAVER VALLEY 2	BVS2	HATCH 2	EIH2	QUAD CITIES 1	QAD1
BIG ROCK POINT	BRP1	HOPE CREEK	HCS1	QUAD CITIES 2	QAD2
BRAIDWOOD 1	BRS1	HUMBOLDT BAY 3	HMB3	RANCHO SECO	RSS1
BROWNS FERRY 1	BRF1	INDIAN POINT 2	IPS2	RIVER BEND	RBS1
BROWNS FERRY 2	BRF2	INDIAN POINT 3	IPS3	ROBINSON 2	HBR2
BROWNS FERRY 3	BRF3	KEWAUNEE	KNP1	SALEM 1	SGS1
BRUNSWICK 1	BEP1	LA CROSSE	LBR1	SALEM 2	SGS2
BRUNSWICK 2	BEP2	LASALLE 1	LSC1	SAN ONOFRE 1	SOS1
BYRON 1	BYS1	LASALLE 2	LSC2	SAN ONOFRE 2	SOS2
BYRON 2	BYS2	LIMERICK	LGS1	SAN ONOFRE 3	SOS3
CALLAWAY	CAY1	MAINE YANKEE	MYP1	SEABROOK	SBK1
CALVERT CLIFFS 1	CCN1	MCGUIRE 1	MGS1	SEQUOYAH 1	SNP1
CALVERT CLIFFS 2	CCN2	MCGUIRE 2	MGS2	SEQUOYAH 2	SNP2
CATAWBA 1	CNS1	MILLSTONE 1	MNS1	SHEARON HARRIS 1	SHS1
CATAWBA 2	CNS2	MILLSTONE 2	MNS2	SHOREHAM	SNS1
CLINTON 1	CPP1	MILLSTONE 3	MNS3	ST. LUCIE 1	SLS1
COOK 1	DCC1	MONTICELLO	MNP1	ST. LUCIE 2	SLS2
COOK 2	DCC2	NINE MILE PT. 1	NMP1	SUMMER	VCS1
COOPER STATION	CPR1	NINE MILE PT. 2	NMP2	SURRY 1	SPS1
CRYSTAL RIVER 3	CRP3	NORTH ANNA 1	NAS1	SURRY 2	SPS2
DAVIS-BESSE	DBS1	NORTH ANNA 2	NAS2	SUSQUEHANNA 1	SES1
DIABLO CANYON 1	DCP1	OCONEE 1	NEE1	SUSQUEHANNA 2	SES2
DIABLO CANYON 2	DCP2	OCONEE 2	NEE2	THREE MILE ISL. 1	TMI1
DRESDEN 1	DRS1	OCONEE 3	NEE3	THREE MILE ISL. 2	TMI2
DRESDEN 2	DRS2	OYSTER CREEK	OCP1	TROJAN	TNP1
DRESDEN 3	DRS3	PALISADES	PAL1	TURKEY POINT 3	TPS3
DUANE ARNOLD	DAC1	PALO VERDE 1	PAV1	TURKEY POINT 4	TPS4
FARLEY 1	JMF1	PALO VERDE 2	PAV2	VERMONT YANKEE 1	VYS1
FARLEY 2	JMF2	PALO VERDE 3	PAV3	VOGTLE 1	AWV1
FERMI 2	EFP2	PEACH BOTTOM 2	PBS2	WASH. NUCLEAR 2	WNP2
FITZPATRICK	JAF1	PEACH BOTTOM 3	PBS3	WATERFORD 3	WGS3
FORT CALHOUN	FCS1	PERRY	PNP1	WOLF CREEK	WCS1
FORT ST. VRAIN	FSV1	PILGRIM	PPS1	YANKEE-ROWE	YKR1
GINNA	REG1	POINT BEACH 1	PBN1	ZION 1	ZIS1
				ZION 2	ZIS2

IPRDS Plant 1 -- IP1
IPRDS Plant 2 -- IP2
IPRDS Plant 3 -- IP3
IPRDS Plant 4 -- IP4
IPRDS Plant 5 -- IP5

Identifiers for Stations

The plant unit identifier listed above with the plant unit number omitted. For example, ZIS for Zion Station (both Unit 1 and 2).

Identifiers for Utilities

For groups of plants operated by a single utility, the three-letter Nuclear Plant Reliability Data System utility codes with the last character blank. For example, FPL for Florida Power and Light Co.

Special Identifiers for Groups of Plants

GROUP	FID
All PWRs	PWR
All BWRs	BWR
All Babcock & Wilcox	BW
All Combustion Eng.	CE
All General Electric	GE
All Westinghouse	W
All Plants	ALL

TABLE 2. HUMAN ERROR PROBABILITY REFERENCES LISTED BY DOCUMENT NUMBER

Document Number	Reference
1-62	S. J. Munger, R. W. Smith, and D. Payne, An Index of Electronic Equipment Operability: Data Store, AIR-C43-1/62/RP(1), January 1962.
1/75	U.S. Nuclear Regulatory Commission, Reactor Safety Study: An Assessment of Accident Risks in U.S. Commercial Nuclear Power Plants, WASH-1400, NUREG-75/014, October 1975.
1-81	D. D. Carlson, Reactor Safety Study Methodology Applications Program: Sequoyah #1 PWR Power Plant, NUREG/CR-1659, February 1981.
1-82	D. A. Topmiller et al., Human Reliability Data Bank for Nuclear Power Plant Operations Volume 1: A Review of Existing Human Reliability Data Banks, NUREG/CR-2744, December 1982.
1-83	A. D. Swain and H. E. Guttman, Handbook of Human Reliability Analysis with Emphasis on Nuclear Power Plant Applications, NUREG/CR-1278, August 1983.
1/84	A. N. Beare et al., A Simulator Based Study of Human Errors in Nuclear Power Plant Control Room Tasks, NUREG/CR-3309, January 1984.
2/84	K. Comer, D. Seaver, W. Stillwell, and C. Gaddy, Calculating Human Reliability Estimates Using Expert Judgement, NUREG/CR-3688, Vol. 2, November 1984.
3-84	W. R. Sugnet, G. J. Boyd, and S. R. Lewis, Oconee PRA, NSAC-60, Vol. 1, June 1984.
4/84	A. C. Payne et al., Interim Reliability Evaluation Program: Analysis of the Calvert Cliffs Unit 1 Nuclear Power Plant, NUREG/CR-3511, Vols. 1 and 2, August 1984.
1/85	Luckas, O'Brien, Perline, and Spettell, Operator Actions in Anticipated Transient Without Scram (ATWS-TC) Sequence for Peach Bottom Plant, October 1985.
2/85	J. N. O'Brien and Spettell, Uses of Human Reliability Analysis Probabilistic Risk Assessment Results to Resolve Personnel Performance Issues That Could Affect Safety, NUREG/CR-4103, March 1985.
2/86	R. C. Bertucio et al., Analysis of Core Damage Frequency from Internal Events: Surrey, Unit 1, NUREG/CR-4550, Vol. 3, 1986.

TABLE 2. (CONTINUED)

Document Number	Reference
3/86	Kolaczkowski et al., Analysis of Core Damage Frequency from Internal Events: Peach Bottom, Unit 2, NUREG/CR-4550, Vol. 4, October 1986.
1/87	M. T. Drouin et al., Analysis of Core Damage Frequency from Internal Events: Grand Gulf, Unit 1, NUREG/CR-4550, Vol. 6, April 1987.
2/87	R. C. Bertucio et al., Analysis of Core Damage Frequency from Internal Events: Sequoyah, Unit 1, NUREG/CR-4550, Vol. 5, February 1987.

TABLE 3. HARDWARE COMPONENT FAILURE DATA REFERENCES LISTED BY DOCUMENT NUMBER

Document Number	Reference
200-81	Big Rock Point Probabilistic Risk Assessment, Consumer Power Company, March 1981.
205-86	Connecticut Yankee Probabilistic Safety Study, NUSCO 149, February 1986.
209-82	Indian Point Probabilistic Risk Assessment, Pickard, Lowe, and Garrick, Inc., December 1982.
211-85	Millstone Probabilistic Risk Assessment, Northern Utilities, July 1985.
212-81	Electric Power Research Institute (Nuclear Safety Analysis Center), A Probabilistic Risk Assessment of Oconee Unit 3, NSAC-60, Vols. 1-4, June 1984.
213-81	Zion Probabilistic Risk Assessment, Pickard, Lowe, and Garrick, Inc., September 1981.
54-75	Reactor Safety Study, Appendix III--Failure Data, WASH-1400, NUREG-75/014, U.S. Nuclear Regulatory Commission, 1975 - data under review, some entry
53-83	IEEE Standard 500, Nuclear Power Engineering Committee, IEEE Power Engineering Society, 1984.
63-82	NUREG/CR-1205, Data Summaries of Pumps at U.S. Nuclear Power Plants, Rev. 1, January 1980.
36-85	NUREG/CR-3831, The In-Plant Reliability Data Base for Nuclear Plant Components: Interim Report for Diesel Generators, Batteries, Chargers and Inverters, January 1985.
133-86	Electric Power Research Institute, The Reliability of Emergency Diesel Generators at U.S. Nuclear Power Plants, NSAC 108, September 1986.

4. CRITERIA FOR DATA INCLUSION

The following sections describe the specific criteria used to qualify data sources for entry into the NUCLARR system. Only those data that have met the criteria specified in Sections 4.1 and 4.2 are included in the raw data appendices of Parts 2 and 3 of Volume V and summarized in Part 4.

4.1 HEP Side

Data entered in the HEP side of the NUCLARR system must meet three criteria:

1. They must specify a human action;
2. They must specify a piece of equipment or a system; and,
3. They must be quantitative in nature. The most preferable data are in the form of an HEP statement with upper and lower confidence bounds. Data presented as median values with errors, or simply as error observed over the number of opportunities for error, are also acceptable.

If data obtained from a study meet the criteria specified above but are lacking in scientific merit, they may be excluded from the data base by the HHRAG review group. Exclusion, although possible, is the exception rather than the rule. The NUCLARR user is expected to be relatively sophisticated and able to select those documents germane to the problem under investigation.

Data reported in one source which are simply repeated in a second source are also not included. For example, once data from WASH-1400[11] have been entered in NUCLARR, a review article which merely repeats those data would not be suitable for inclusion in NUCLARR. If the origin of data is other than in the document being reviewed and data have been modified by expert judgment or task analysis methods, the transformed data are available for the analyst's review and the original source is referenced. These data are not aggregated. This procedure helps prevent the possibility of over-representation of data within the data base.

4.2 HCFD Side

Data requirements for the HCFD side of the NUCLARR system are limited to time- and demand-based estimates and do not, at the present time, include other types of data, such as unavailability or common-cause. Losses of function are not included, as they are confounded with function losses due to human intervention, i.e., error. What is included, then, are events where components were in need of repair, replacement, or adjustment.

Furthermore, components selected for inclusion in the NUCLARR system are those that are typically involved in basic events in fault-tree models of nuclear power plant systems. They also tend to be those types of components most often found in safety systems.

HCFD entries have been restricted to failures within specified component boundaries. Secondary failures have been excluded; i.e., failures due to conditions existing outside the boundary that produce conditions exceeding the design basis of the component. Thus, closely associated equipment that is physically coupled is included, and failures caused by common-support systems are not.

Ideal failure rate data, therefore, depend upon the component and its immediate environment and application.

In summary, HCFD accepted for inclusion into the NUCLARR system must have:

- A description of component and failure mode; and
- A probability value; i.e., number of failures and number of operating hours or demands, or the rate itself.

When available, an account of plant operating conditions or the state in which the failures occurred is also preserved in the data base. Finally, raw data are preferred over rates which have made use of Bayesian updates.

5. AGGREGATION FEATURES

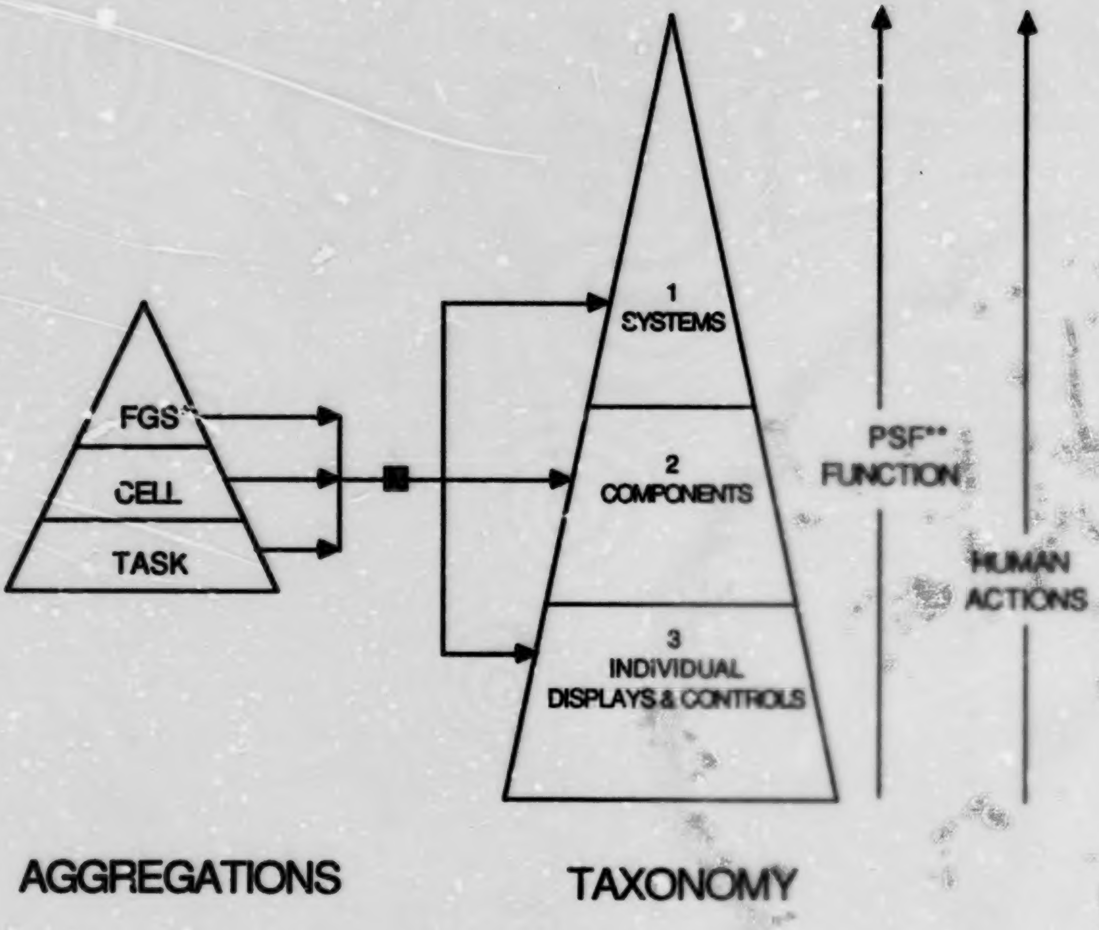
The sections which follow present the aggregation features of the NUCLARR system for both HEP and HCFD. For in-depth information regarding the aggregation features and corresponding algorithms resident in the NUCLARR system, the reader is referred to Section 3.3 of Volume IV: User's Guide, Part 3: NUCLARR System Description.[6]

5.1 HEP Data Treatment

The NUCLARR system automatically makes a number of calculations for each HEP source data point. Depending on the degree of detail available when data are first entered, the NUCLARR system will compute upper confidence bounds (UCBs), lower confidence bounds (LCBs), error factors, medians, means, errors, and opportunities for error. All of these data are present for the reader's review. Separate aggregation algorithms are applied to compute task statement HEPs, cell HEPs, and functional group HEPs. These aggregations are computed for each of the three levels of the the NUCLARR system taxonomy. Figure 1 presents this HEP configuration with each of the aggregations being nested in each of the equipment taxonomy levels. Aggregation values are derived in the following manner.

For computing task statement HEP aggregations, raw source data are compared for consistency using a homogeneity test based upon the binomial distribution. Statistically consistent HEPs are pooled; the task HEP is the total number of errors divided by the total number of opportunities. Based upon binomial distribution characteristics, the UCB and LCB limits are computed.

For computing cell HEP aggregations, HEPS from functionally related tasks are gathered together and are assumed to be lognormally distributed. Therefore, the sum of the logs of the HEPS for a given cell is divided by the number of HEPs, and the antilogarithm is calculated to determine the cell HEP. Calculation of the error factor for the cell HEP is based on taking the root mean square of the log ratios of task statement UCBs to LCBs.


FGS*
CELL
TASK
1
SYSTEMS
2
COMPONENTS
3
INDIVIDUAL
DISPLAYS & CONTROLS
PSF**
FUNCTION
HUMAN
ACTIONS
AGGREGATIONS
TAXONOMY

* FUNCTIONAL GROUP SUMMARY
** PERFORMANCE SHAPING FACTORS

Figure 1. Relationship of NUCLARR HEP aggregations and taxonomy.

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The functional group summary is the highest level of HEP data allowed in the NUCLARR system. For computing functional group HEP aggregations, calculations are based on task level HEPs, just as they are in the cell aggregation calculations. In this case, the aggregation employs task HEPs functionally grouped not for one cell but taken across a set of cells. This distribution of HEPs is assumed to be lognormal. Again, the sum of the logs of the HEPs for these tasks comprising the functional group is divided by the number of HEPs, and the antilogarithm is calculated to determine the functional group HEP. Calculation of the error factor for the functional group HEP is based on taking the root mean square of the log ratios of task statement UCBs to LCBs.

Those readers wishing to sample raw data from Part 2 of Volume V and manually compute task, cell, and functional group HEPs are referred to Volume IV in this series for procedures outlining manual calculation methods.

5.2 HCFD Treatment

There are two sets of aggregations within the HCFD side of the NUCLARR system. The first set is performed automatically when data are first entered. The second set is only applied when the user performs custom aggregations with the computer-based version of the NUCLARR system. Although time-consuming, it would be possible to perform these same aggregations manually. The methods used in the NUCLARR system recognize two types of data beside raw data--tolerance interval information and confidence intervals. Generic data are acceptable input; e.g., WASH 1400[11] data are available for review by the analyst using the NUCLARR system, but are not as preferred by the system as are raw data.

The automatically executed algorithms are driven by the nature of the data themselves. Acceptable combinations include homogeneous/raw; homogeneous/tolerance information available; homogeneous/no tolerance information available; preaggregated data/tolerance information available; and preaggregated data/no tolerance information available. Homogeneous data by definition are from equipment having a constant failure rate; raw data are the number of failures and the associated demand, or exposure time. Details regarding different Bayes procedures, raw data conversion, and weighted and unweighted fits to lognormal distributions are contained in Volume IV of this series.

The aggregation procedure computes failure probabilities at the following five separate event levels: (a) component/failure mode group; (b) component/failure mode; (c) component/design/failure mode group; (d) component/design/failure mode; and (e) component/design/failure mode/normal state. Basic NUCLARR system output is a point estimate and tolerance bound, with supporting information about the number of records or raw data points in the aggregation, normal operating condition (state), failure mode, component, and design. Supporting information is available regarding each raw data point contributing to the aggregated value. Aside from those categories cited above, this information includes component application, aggregation type, survey/period, origin of failure and exposure data, plant identification code, and systems and subsystem information.

Additionally, the NUCLARR system calculates median, mean, error factor, and upper tolerance bounds for each data point. The treatment of data in these calculations for raw data is described in more detail in Volume IV of this series.

6. DATA STRUCTURE

The sections which follow describe briefly the data structure for both the HEP and HCFD contained in the NUCLARR system.

6.1 Matrix Schema for HEP Data

A hierarchical approach is used in the HEP side of the NUCLARR system; this supports the level of detail appropriate to the needs of the risk analyst. Data are nested under equipment categories. For example, Level 1 refers to equipment systems, such as the emergency core cooling system and is further identified by nuclear steam supply system vendor. Level 2 refers to equipment components, such as pumps and valves. Level 3 refers to individual controls or displays, such as a meter or CRT. Action verbs keyed distinctly to each of the three levels are recorded as well. For Levels 1 and 2, these action verbs are specified for each of three types of personnel: control room operators, equipment or auxiliary operators, and maintenance technicians.

The reader is referred to Appendix B of Part 2, where equipment characteristics are listed by row and human actions are listed by column for each matrix. The intersection of an equipment characteristic (identifier) with a human action characteristic (identifier) within a particular matrix constitutes a cell. There is a unique numeric identifier associated with each cell. In addition, there are functional group summary cells that contain data combined from lower cells. For example, the functional group summary cell for valves includes globe valves, needle valves, gate valves, etc. Each of the functional group summary cells also has a unique identifier.

Individual data records also contain a host of information not specified by the matrix. These are addressable on-line when using the ad-hoc search mode of the NUCLARR system and include plant code, performance shaping factors, time available to the operator or crew, mode (omission or commission), whether recovery was considered, plant/sequence, source document used, and data origin, e.g., expert judgment, laboratory, or field data.

6.2 Matrix Schema for NCFD

Contained within Volume V, Part 3, are failure data for components typically used at nuclear power plants. All plant codes, component codes, distribution codes, application codes, and failure mode codes defined in EGG-REQ-7742[8] have been implemented.

Data are structured first by event. There are five basic event levels:

1. Component category.

2. Component type (or just component).

3. Component design.

4. Failure mode.

5. Normal state.

In addition, data are organized by:

- Application (environment or other parameters);
- Plant identifier;
- Safety grade or not;
- Document ID;
- Reference ID;
- Whether or not control circuits are included;

- Severity of failure;
- Failure data origin (expert judgment, plant experience, etc.);
- Exposure data origin and data record type (log books, utility base records, cycle counters, and total operating hours); and
- Failure data themselves, where failure data may take the form of median failure rate or probability, mean failure rate or probability, units - demand or per hour, confidence interval, tolerance interval, error factor, variance, Bayesian update flag, and the data distribution.

Figure 2 presents the NUCLARR taxonomy for HCFD. The five levels for components are presented with examples which satisfy the characteristics of each level. Component application is presented as a possible sixth level. An example of application would be the voltage level for a circuit breaker or the type of water/fluid circulated by a pump. Applications, as such, are used to further refine NUCLARR searches of HCFD.

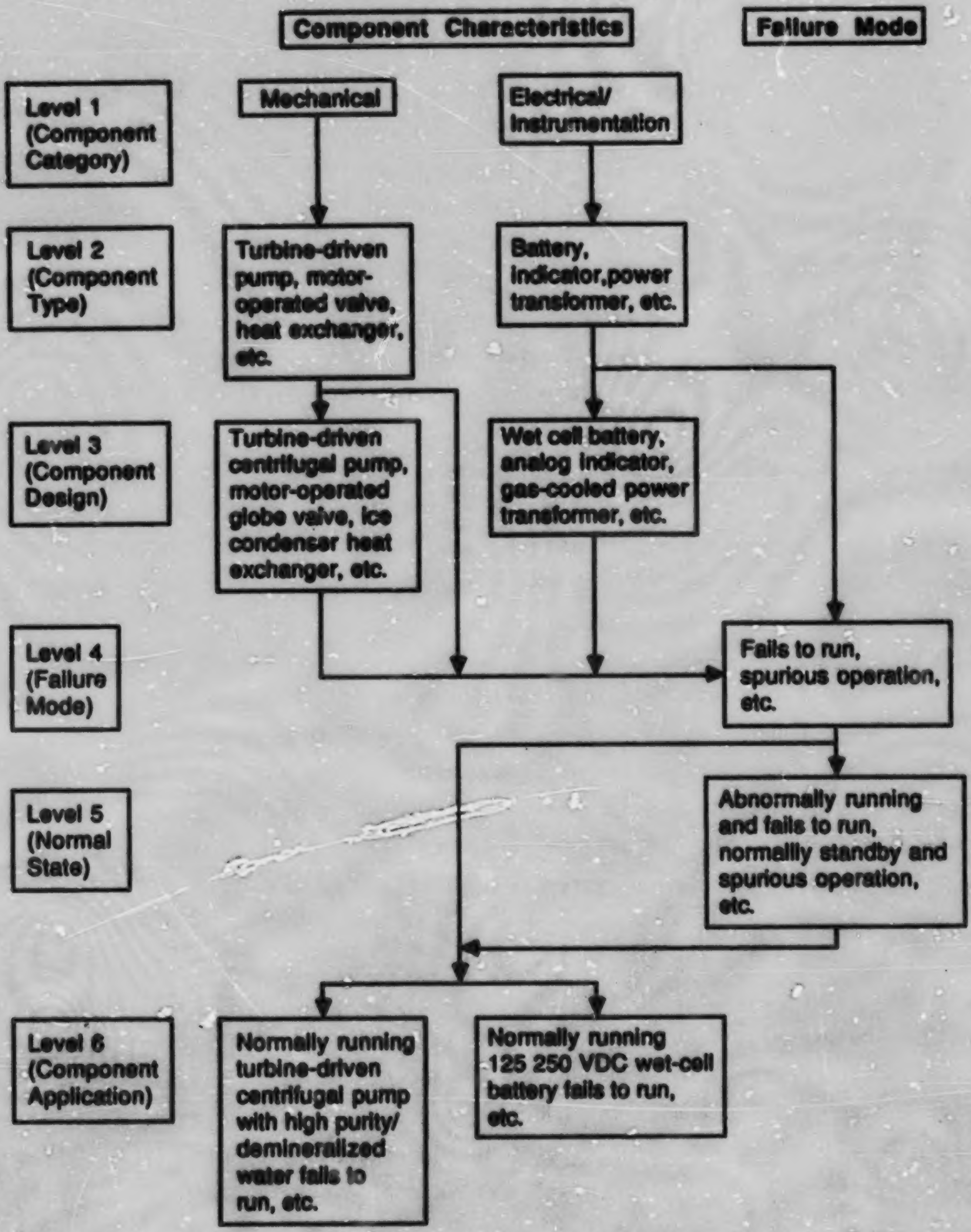
Component Characteristics
Failure Mode
Level 1 (Component Category)
Mechanical
Electrical/ Instrumentation
Level 2 (Component Type)
Turbine-driven pump, motor-operated valve, heat exchanger, etc.
Battery, indicator,power transformer, etc.
Level 3 (Component Design)
Turbine-driven centrifugal pump, motor-operated globe valve, ice condenser heat exchanger, etc.
Wet cell battery, analog indicator, gas-cooled power transformer, etc.
Level 4 (Failure Mode)
Fails to run, spurious operation, etc.
Level 5 (Normal State)
Abnormally running and fails to run, normallly standby and spurious operation, etc.
Level 6 (Component Application)
Normally running turbine-driven centrifugal pump with high purity/ demineralized water fails to run, etc.
Normally running 125 250 VDC wet-cell battery fails to run, etc.

Figure 2. HCFD structure.

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7. HOW TO USE THE DATA MANUAL

Prior to attempting to extract meaningful data from the Data Manual, it is best to become acquainted with its various parts. Figure 2 presents a series of steps depicting the flow of actions related to use of the various parts of the Data Manual. Each part of Volume V contains within itself a task flow and example of how to use the data found therein.

In Figure 2, Step 1.0, calls for establishing PRA data requirements. In the case of obtaining HEP data requirements, this requires that the analyst construct a problem statement of sufficient detail to indicate the involvement of control room operators, auxiliary operators, or maintenance personnel and the equipment or systems they would use in meeting such a problem. In the case of obtaining HCFD, the analyst would want to determine the components of interest for a particular plant sequence, the normal operating conditions of that piece of equipment, and the failure mode(s) involved.

Step 2.0 requires that the analyst review Volume I: Summary Description (NUREG/CR-4639) to get an overview of the capabilities and types of data resident in the NUCLARR system. Users may review this volume to find out about other documents in the NUCLARR series or to find a point of contact at the NUCLARR Data Clearinghouse for assistance in determining whether or not the NUCLARR system is appropriate to their needs.

Step 3.0 calls for the analyst to review in-house resources. The NUCLARR system may be addressed by use of either computer facilities or by following procedures outlined in Volume V. If the user has access to a personal computer with the capability to accept the NUCLARR system, then the analyst should acquire the NUCLARR computerized data base (see Step 3.1). Volume IV: User's Guide should be consulted for the procedures involved in carrying out descriptive or ad-hoc searches.

Steps 3.2 and 3.2.1 indicate that the analyst who has no personal computer or copy of NUCLARR software should consult Part 1 of Volume V.

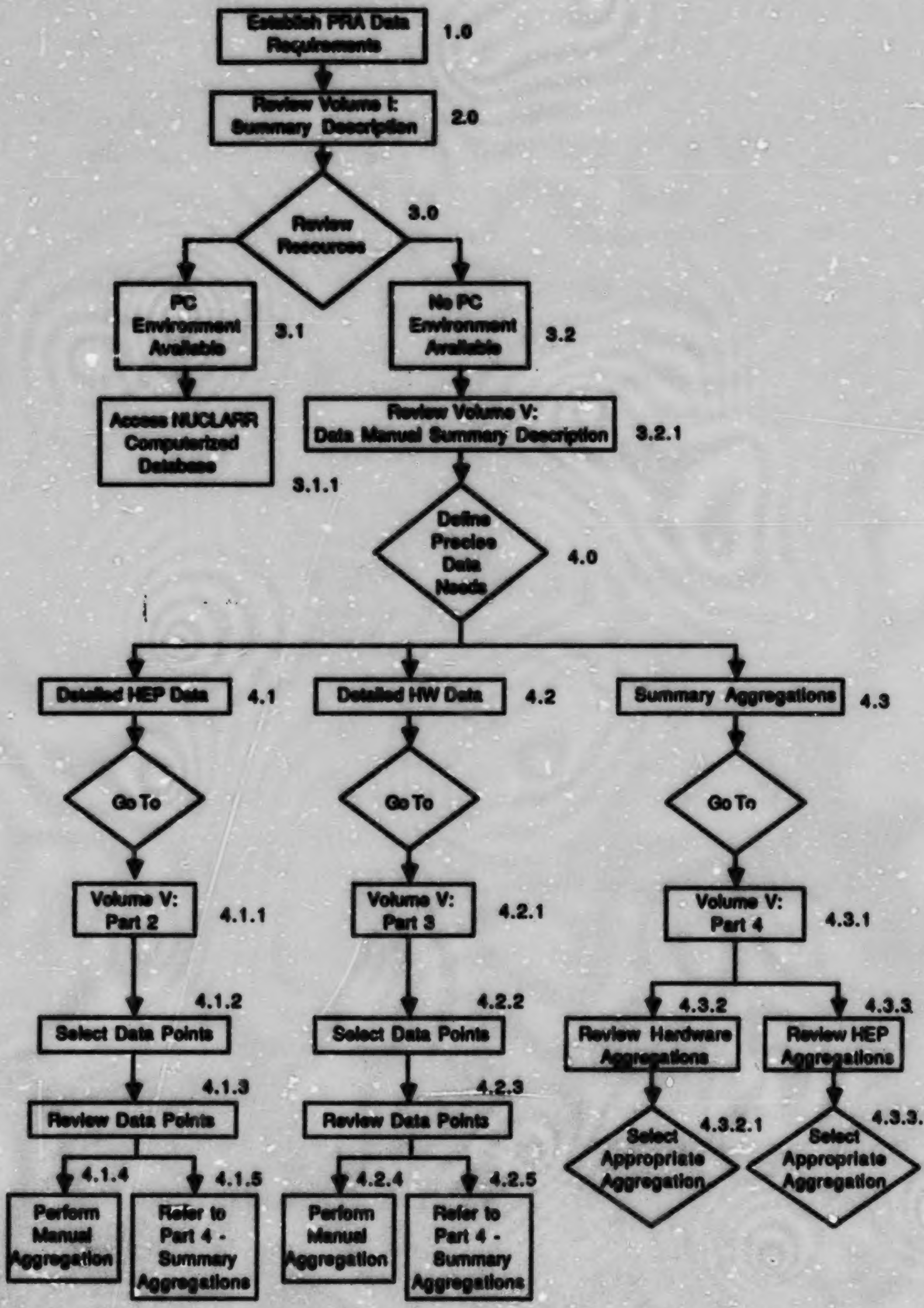
Establish PRA Data Requirements
1.0
Review Volume I: Summary Description
2.0
Review Resources
3.0
PC Environment Available
3.1
No PC Environment Available
3.2
Access NUCLARR Computerized Database
3.1.1
Review Volume V: Data Manual Summary Description
3.2.1
Define Precise Data Needs
4.0
Detailed HEP Data
4.1
Detailed HW Data
4.2
Summary Aggregations
4.3
Go To
Go To
Go To
Volume V: Part 2
4.1.1
Volume V: Part 3
4.2.1
Volume V: Part 4
4.3.1
4.1.2
Select Data Points
4.2.2
Select Data Points
4.3.2
Review Hardware Aggregations
4.3.3
Review HEP Aggregations
4.1.3
Review Data Points
4.2.3
Review Data Points
4.3.2.1
Select Appropriate Aggregation
4.3.3.1
Select Appropriate Aggregation
4.1.4
4.1.5
Perform Manual Aggregation
Refer to Part 4 - Summary Aggregations
4.2.4
4.2.5
Perform Manual Aggregation
Refer to Part 4 - Summary Aggregations

Figure 3. Task flow for Volume V.

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Step 4.0 requires that the analyst determine more precisely his or her data needs and whether these needs might be best met by going to detailed or summary HEP and/or HCFD information. For example, if detailed HEP data are desired (see Step 4.1), then the analyst may address data located in Part 2 such as " Control room operator fails to manually activate the consequence limiting control system (CLCS) at Surry, Unit 1, data from NUREG CR-4550."

If Part 2: HEP Estimates has been selected (see Step 4.1.1), the analyst will use the procedures outlined in Part 3 of Volume V to go to the correct cells (Step 4.1.2), review data including factors which may limit the utility of particular data points to the analysis in question, and, finally, obtain data points appropriate to the data analysis at hand (Step 4.1.3).

If only a subset of rates in Part 2 are acceptable to the analyst, then he or she may wish to perform a manual aggregation (Step 4.1.4) or select the anchor value most appropriate to the problem at hand. Such might be the case if, for example, the analyst were only interested in rates for crew errors committed at Babcock & Wilcox plants during loss-of-offsite power sequences. If a broader scope of aggregation is desired due either to the nature of the problem at hand or to lack of specific data being available in the open literature, the user may wish to go to Part 4: Summary Aggregations (see Step 4.1.5). For example, the user may want to determine a median HEP estimate for all occasions where control room crews have attempted to initiate high pressure injection in the presence of various plant transients.

If detailed HCFD are desired (see Step 4.2), then the analyst may address data located in appendices to this document, such as "failure for diesel generator with diesel engine driver, normally in standby, fails to start, raw data = 6 failures over 1340 demands, data collection period 1974 through 1983, at Zion Station."

If Part 3 has been selected (see Step 4.2.1), the analyst will use the procedures outlined therein to go to the correct cells (Step 4.2.3); review data, including factors related to the component rates which may limit their utility to the analysis in question; and, finally, manually select those data points most appropriate (Step 4.2.4). Once these data points are selected, the user may wish to aggregate the data (4.2.4) or select the anchor value most appropriate to the problem at hand. If only a general screening value is needed or if a very large number of HCFD rates are observed, the analyst may wish to review Part 4: Summary Aggregations (see Step 4.2.5)

If a generic anchor value (e.g., HEP or HCFD rate) is all that is required, then the analyst may wish to access directly summary aggregation information contained in Part 4: Summary Aggregations (see Steps 4.3 and 4.3.1). Summary aggregations for the HCFD side of the NUCLARR system are addressed as part of Step 4.3.2 and include component failure rates in the form "check valves, fails to operate group, design equals all." Note that demand and hourly aggregations are listed separately. Furthermore, aggregations are collapsed across plant, survey period, and reference document. If a user requires data on the survey period and plant, then Part 3 should be used as a reference instead.

Representative data to be reviewed as part of Figure 3, Step 4.3.3, include detailed summary aggregations across HEP functional cells, such as those contained in cell 0429001, the summary of main steam systems, where rates and bounds are presented along with classification by error type (omission or commission) and by virtue of the extent to which recovery actions are represented in the calculations. Note that these aggregations are collapsed across performance shaping factors and nuclear power plant. Users requiring information on the time necessary for a crew to respond to plant/transient conditions should refer instead to Part 2.

8. HOW TO PERFORM A MANUAL SEARCH OF HCFD

This section expands the detail of the overview task flow presented as Figure 3 and presents in further detail the task flow required to perform a manual search of the raw HCFD found in the appendices to this document. Next the reader is referred to Figure 4, where the steps in the search and aggregation process are illuminated by use of an example of an HCFD data search.

The NUCLARR search process begins by establishing HCFD requirements (see Step 1.0, Figure 4). The example problem is:

> As part of a generic issues study, a risk analyst is called upon to give estimates for various hardware component failures, one of which requires that the analyst calculate the failure probability of a circuit breaker failing to close on demand. In an effort to obtain a representative sample of hardware component failure probabilities available in the open literature, the analyst decides to consult NUCLARR.

Step 2.0 directs us to Volume V, Part 3. Another option would have to been to access these same data from the personal computer version of NUCLARR.

The NUCLARR system data structure has HCFD indexed by whether the component type can be classified as being primarily mechanical or electrical in nature. Thus, we must segregate electrical and mechanical components failure events (Step 3.0). For our current problem, we would recognize the circuit breaker as being primarily electrical in nature. This categorization is crucial for Steps 4.1 and 4.2 of this procedure.

To the extent possible, we will want to find those data which match our data requirements most closely. This requires that the analyst list in some detail the component type, design, failure mode, and normal operating state. This combination of data features is called the event

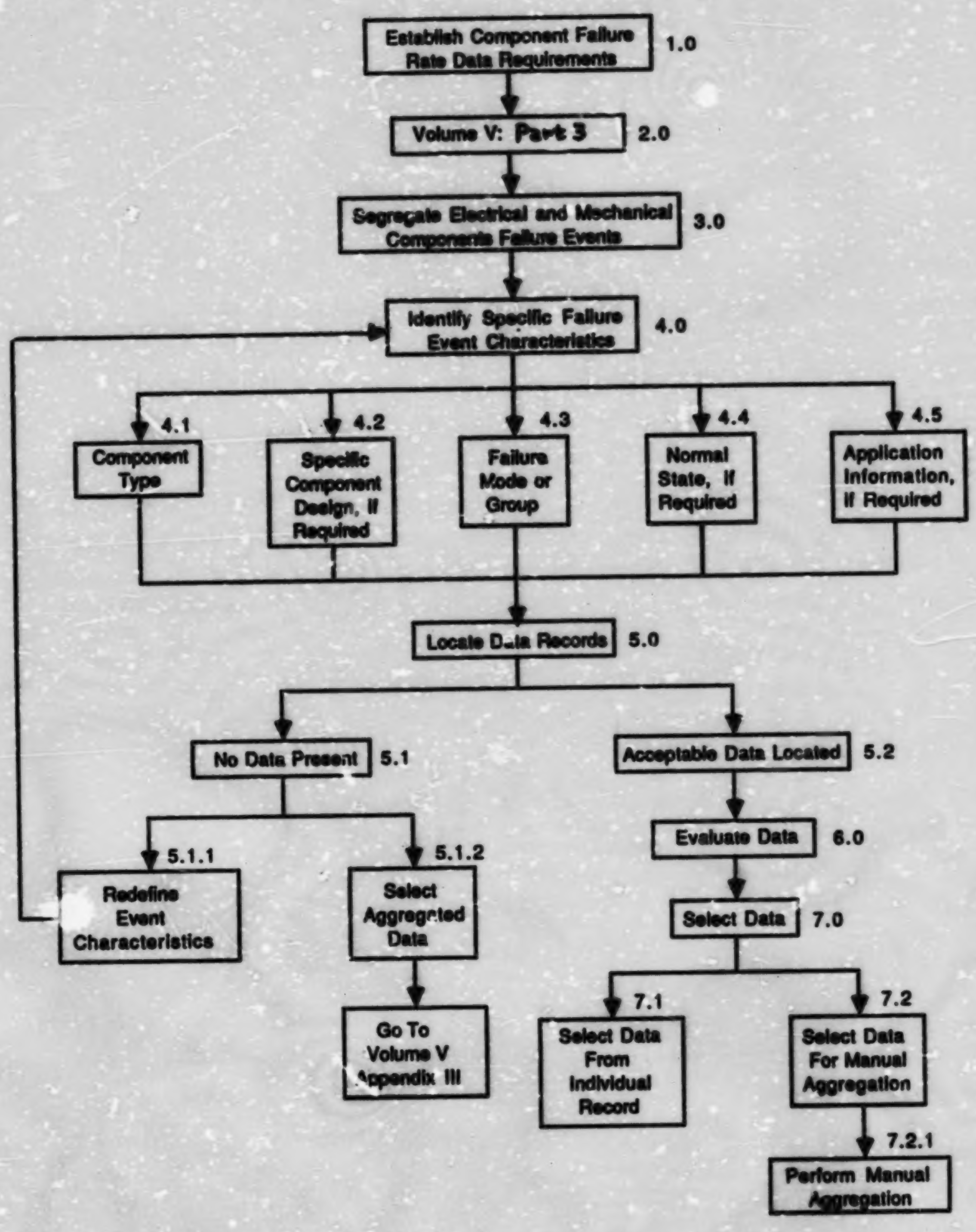
Establish Component Failure Rate Data Requirements
1.0
Volume V: Part 3
2.0
Segregate Electrical and Mechanical Components Failure Events
3.0
Identify Specific Failure Event Characteristics
4.0
4.1
Component Type
4.2
Specific Component Design, If Required
4.3
Failure Mode or Group
4.4
Normal State, If Required
4.5
Application Information, If Required
Locate Data Records
5.0
No Data Present
5.1
Acceptable Data Located
5.2
5.1.1
Redefine Event Characteristics
5.1.2
Select Aggregated Data
Go To Volume V Appendix III
Evaluate Data
6.0
Select Data
7.0
7.1
Select Data From Individual Record
7.2
Select Data For Manual Aggregation
7.2.1
Perform Manual Aggregation

Figure 4. Top level flow for manual search of NCFD.

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characteristics of the hardware component failure rate or probability of failure on demand. Step 4.0 requires the analyst to make decisions regarding these event characteristics. The format for these decisions is contained in Steps 4.1 through 4.5 of Figure 4.

Step 4.1, define component type, requires that the user refer to the hardware component codes located in Appendices B and C of this report. If only systems data were needed, then the user would go to pages A-1 through A-6 (Appendix A of Part 3). For our example, determining circuit breaker failure rates, the reader should search Appendix C--Electrical Component Design Codes.

The general code for circuit breakers, powered, is CBP; we will use this in searching data records. At this point, we could move to step 5.0 and locate data records or continue to better refine our search strategy. If you wish to inspect some records before going on to Step 4.2, then turn to Appendix D, pages 250 through 263. Notice that each page contains one failure rate estimate for circuit breakers.

Proceed to Step 4.2 and select a design code for the component. In our present example, the design of the circuit breaker is unknown; so we will examine records for all types of power circuit breakers. This means we will consider all records whose component code begins with the default code found in Appendix C, CBP.

Step 4.3 requires that the user select a failure mode. Table 4 presents the set of component failure modes allowed by the NUCLARR system. The failure modes group listed in Table 4 is not applied to each individual record. Instead, the more detailed subcategories such as fails to run, fails to de-energize, or spurious start are coded on each individual record. If you look at pages D-250 through D-263, you will see that NUCLARR has CBP data for the following failure modes: fails to close, fails to open, and spurious open. For our present example, we will accept information pertaining to all failure modes for CBP.

TABLE 4. HARDWARE FAILURE MODE CODES

Code	Description
FTG	FAILS TO OPERATE GROUP
FTO	Fails to Operate
FTS	Fails to Start
FTR	Fails to Run
FTP	Fails to Open
FTC	Fails to Close
FTE	Fails to Energize
FTD	Fails to Deenergize
FTT	Fails to Transfer Electrically
SOG	SPURIOUS OPERATION GROUP
SO	Spurious Operation
SS	Spurious Start
SP	Spurious OPen (Transfer Open)
SC	Spurious Close (Transfer Close)
SE	Spurious Energize
SD	Spurious Deenergize
ST	Spurious Transfer electrically
LKG	LEAKAGE GROUP
LK	Leakage
EL	External Leakage/Rupture
IL	Internal Leakage
BLG	BLOCKAGE GROUP
BL	Blockage
PL	Plugged

Step 4.4 calls for the analyst to select the normal operating state for the component CBP. Table 5 lists the normal operating states identified in the NUCLARR system. These classifications refer to the operating mode of the component prior to its failure. Typically, these states can be inferred from the failure mode and/or system designation. For example, a valve that fails to open on demand can probably be assumed to be normally closed. In our present example, the normal operating states we wish to include are all.

TABLE 5. HARDWARE COMPONENT NORMAL STATES

Code	Description
NA	NORMALLY ALTERNATING
NC	NORMALLY CLOSED
ND	NORMALLY DEENERGIZED
NE	NORMALLY ENERGIZED
NL	NORMALLY LOCKED-OUT
NO	NORMALLY OPEN
NR	NORMALLY RUNNING
NS	NORMALLY STANDBY
XX	UNSPECIFIED

Step 4.5 requires the user to review the application(s) for components whose failure rates are being assessed. In our present example, we wish our search to include those instances where we have information regarding the voltage level across circuit breakers. This voltage information is considered to be application information. Using our combined search criteria for component design, failure mode, normal operating state and application, six CBP failure rates have been qualified.

Step 5.0 is now officially executed, and the six records from Appendix D are located. [Users of the NUCLARR system may find it advantageous to locate records at each step (4.1 through 4.5), since making search criteria too stringent may result in an empty search (see 5.1.1)].

Step 5.1 describes the process when no data are found. The analyst may make take either of two paths. The first requires redefining the event characteristics to include other component designs, failure modes, normal operating states, or applications of the component. The second strategy, Step 5.1.2, requires the analyst to make do with aggregated data where a general rate for all types of circuit breakers might be useful as a screening value. If this is the case, then the user is referred to Part 4: Summary Aggregations to find a default rate to be used in the analysis.

In our example, we have located acceptable data (Step 5.2)--six CBP records.

Step 6.0 calls for the analyst to evaluate these located data on a case-by-case basis. Data may be evaluated according to the analyst's needs. The following criteria may prove to useful as a guide in this process:

- Failure and exposure origin,
- Failure and exposure records,
- Failure degree, and
- System.

Failure and exposure origins (see Table 6) characterize the reference that was used to generate the number of failures and the exposure time or demands which appears in the data records. A user could restrict a search to only those records which are compiled from actual plant experience. Failure record and exposure record codes (see Table 7) list the specific type of reference used to generate failure and/or exposure data. These codes specify whether data were collected from control room logs, plant maintenance logs, test records, or work requirements.

TABLE 6. NCFD EXPOSURE AND FAILURE ORIGIN CODES

Code	Description
EXPJ	EXPERT JUDGMENT
OTHR	OTHER
PLNT	PLANT EXPERIENCE
TCAL	TOTAL CALENDAR HOURS
TOPH	TOTAL OPERATING HOURS
UNKN	UNKNOWN
LERS	LICENSEE EVENT REPORTS
MFTG	MANUFACTURERS TESTING

TABLE 7. NCFD EXPOSURE AND FAILURE RECORD TYPE CODES

Code	Description
ADLG	ADMINISTRATIVE LOGS
CRLB	CONTROL ROOM LOG BOOKS
DCCN	DEDICATED CYCLE COUNTERS
DEVR	DEVIATION REPORTS
EXPJ	EXPERT JUDGMENT
EXTD	EXTERNAL DOCUMENT
INCD	INCIDENT REPORTS
JOBO	JOB ORDERS
LCOR	LIMITING CONDITIONS FOR OPERATION RECORD
LERS	LICENSEE EVENT REPORTS
MFTG	MANUFACTURERS" TESTING
MOPR	MONTHLY OPERATING STATUS REPORTS
OTHR	OTHER
PLNT	PLANT EXPERIENCE
PMLG	PLANT MAINTENANCE LOGS
PMTR	PLANT MAINTENANCE TEST RECORDS
PMWR	PLANT MAINTENANCE WORK REQUESTS
RHLG	RUN HOUR LOGS
SOCR	SIGNIFICANT OCCURRENCE REPORTS
SSLB	SHIFT SUPERVISOR LOGBOOKS
SURV	SURVEILLANCE TEST INTERVALS
TCAL	TOTAL CALENDAR HOURS
TCRT	TOTAL CRITICAL HOURS
TSTR	TEST RESULTS
UNKN	UNKNOWN
UTDB	UTILITY DATA BASE

Failure degree refers to the severity of the failures for which data were collected. The list used in the NUCLARR system is as follows:

- Catastrophic--a failure that is sudden and complete;
- Degraded--a failure that is gradual and partial with the component providing an unacceptable level of performance that may deteriorate over time into total failure;
- Incipient--a state or condition that if not corrected may lead to one of the previously described states.

Step 7.0 requires the user or analyst to select data. In our particular example, we will use all six of those CPB data identified in Step 5.2 and go to Step 7.2. If we were only interested in the component failure rate from one plant or the rate calculated in one particular study, then we would select one data page from the six identified (Step 7.1).

In a large percentage of cases, after a search has been performed, only a subset of the actual data will be qualified for manual aggregation. It might be that the type of data does not meet the analysts' needs precisely because (a) the survey period from which data were collected was too short or too long or (b) the particular application of the component specified in one of the rates does not match the current research needs or (c) the failure rate may have been calculated from a plant which is not of interest. If any of the abovementioned is the case, then the analyst will select a subset of data for manual aggregation (Step 7.2). For purposes of illustration, in the current example we will include only records containing rates which survey the period after 1975. Four CBP records meet this criteria.

Step 7.2.1, perform a manual aggregation, is now carried out on the four records selected in 7.2. For the purpose of uniform calculations and data interpretations, individual failure rates may be treated as random variables with lognormal distributions. The error factor is defined as the ratio between an upper bound and the median. Failure rates are expected to lie below the upper tolerance bound with a probability corresponding to the selected percentile. In the computer-based version of NUCLARR, the 95th percentile has been selected. The user may refer to Section 4.3 of NUCLARR/CR-4639, Volume IV, Part 3, for approaches to dealing with the aggregation of failure rate data from homogeneous and heterogeneous sources with bounds present and not present.

In our case, each of the four data records has available raw data. Homogeneous raw per-demand data can be characterized by a beta distribution, and homogeneous per-hour data can be described by a gamma distribution. Gamma distribution is related to the chi-square distribution and the beta to the F distribution. Note that our own analysis would be mixed; we have two CBP rates which are demand-based and two which are rate-based. The component failure aggregation approach detailed in Volume IV is based on the work of Martz and Bryson (1983)[15]. Since, for lognormal distributions, the rates must be greater than zero, the equations suggested will produce medians and bounds which are non-zero. This is even the case when the calculated rate from the raw data may be zero, whenever the number of failures is zero.

Ultimately, it is the user/analyst who must decide which aggregation algorithm to apply for manual estimation of hardware component failure rates. All four of our records are suitable to the empirical Bayes procedure(s) outlined in Volume IV, Part 3, Table 10.

Upon reviewing all four CBP failure rates, it is apparent that there is a large disparity between the rate based on demand and the rate based on a per-hour basis. The analyst may wish to record both rates and preserve this aspect of the data. The median estimate for CPB demand-based failures is 1.6E-003; the median estimate failure rate for CPB calculated on a per-hour basis is 4.9E-007. It should be noted that the latter rate refers to the failure mode category-spurious open and the other rate to instances where the failures were ones of either fails-to-open or fails-to-close.

The reader should practice with a number of similar searches for HCFD. In the event that any difficulties arise, the NUCLARR Data Clearinghouse may always be contacted for assistance.

9. SUMMARY

The NUCLARR data management system is an NRC-sponsored repository for probabilistic data that is currently dedicated to human error probability and hardware component failure rates. This report provides the means for the analyst who is without access to computer resources to use the appended raw data in investigating risk-related issues.

Volume V: Data Manual, Parts 1 through 4, of NUREG/CR-4639 is an important source of rate-based information for the analyst and is a living document which will be updated on a periodic basis. These updates will be available to all users in the form of change pages which can be added to Parts 2 and 3 in the Volume V series. Part 4: Summary Aggregations will also be updated in its entirety to reflect any addition of HEP and HCFD rate-based data to the NUCLARR data management system.

The effort at the INEL involving the NUCLARR system is complementary to other NRC-sponsored efforts in the area of risk management, including the System Analysis and Risk Assessment (SARA)[12] and Integrated Reactor Reliability Assessment System (IRRAS)[13] programs.

Users of this volume which complements the computerized NUCLARR data management system are encouraged to submit HEP and/or HCFD directly to the NUCLARR Data Clearinghouse at the INEL. These data may be sent to the address specified in Section 1 of this report. Instructions regarding the appropriate formatting of these data may be found in EGG-REQ-7732, Specification for the Submission of Raw Human Error Probability Data to the NUCLARR Clearinghouse,[14] and EGG-REQ-7742, Requirements for Entry of Component Failure Data in the NUCLARR System.[8]

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APPENDIX A

HARDWARE SYSTEM CODES

Hardware System Codes

Code	Description
AA	CONTROL ROD DRIVE SYSTEM
AB	REACTOR COOLANT SYSTEM (PWR)
AC	REACTOR CORE SYSTEM
AD	REACTOR RECIRCULATION SYSTEM (BWR)
AE	REACTOR COOLANT SYSTEM - HELIUM (HTGR)
AL	ALL SYSTEM (BALANCE OF PLANT) [SPECIAL NON-EIIS CODE]
AP	PRESSURIZER SYSTEM (PWR) [SPECIAL NON-EIIS CODE]
AS	STEAM GENERATING SYSTEM (PWR) [SPECIAL NON-EIIS CODE]
AV	REACTOR VESSEL SYSTEM [SPECIAL NON-EIIS CODE]
BA	AUXILIARY/EMERGENCY FEEDWATER SYSTEM (PWR)
BB	CONTAINMENT COMBUSTIBLE GAS CONTROL SYSTEM
BC	CONTAINMENT ICE CONDENSER/REFRIGERATION SYSTEM (PWR)
BD	CONTAINMENT LEAKAGE CONTROL SYSTEM
BE	CONTAINMENT SPRAY SYSTEM (PWR)
BF	CONTAINMENT VACUUM RELIEF SYSTEM
BG	HIGH PRESSURE CORE SPRAY SYSTEM (BWR)
BH	EMERGENCY/STANDBY GAS TREATMENT SYSTEM
BI	ESSENTIAL SERVICE WATER SYSTEM
BJ	HIGH PRESSURE COOLANT INJECTION SYSTEM (BWR)
BK	CONTAINMENT FAN COOLING SYSTEM (PWR)
BL	ISOLATION CONDENSER SYSTEM (BWR)
BM	LOW PRESSURE CORE SPRAY SYSTEM (BWR)
BN	REACTOR CORE ISOLATION COOLING SYSTEM (BWR)
BO	LOW PRESSURE COOLANT INJECTION SYSTEM (BWR)
BP	LOW PRESSURE SAFETY INJECTION SYSTEM (PWR)
BQ	HIGH PRESSURE SAFETY INJECTION SYSTEM (PWR)
BR	STANDBY LIQUID CONTROL SYSTEM (BWR)
BS	ULTIMATE HEAT SINK SYSTEM
BT	SUPPRESSION POOL MAKEUP SYSTEM (BWR)
BU	LOOP ISOLATION/SHUTDOWN (HTGR) [SPECIAL NON-EIIS CODE]
BV	CONTAINMENT PURGE SYSTEM [SPECIAL NON-EIIS CODE]
BW	INTERMEDIATE HEAD INJECTION (PWR) [SPECIAL NON-EIIS CODE]
BX	UPPER HEAD INJECTION (PWR) [SPECIAL NON-EIIS CODE]
BY	AUTOMATIC DEPRESSURIZATION SYSTEM [SPECIAL NON-EIIS CODE]
CA	BORON RECYCLE SYSTEM (PWR)
CB	CHEMICAL AND VOLUME CONTROL/MAKEUP AND PURIFICATION SYSTEM (PWR)
CC	CLOSED/COMPONENT COOLING WATER SYSTEM
CD	CONTROL ROD DRIVE COOLING SYSTEM (PWR)
CE	REACTOR WATER CLEANUP SYSTEM (BWR)
CF	REACTOR SERVICES SYSTEM
CG	SUPPRESSION POOL PURIFICATION SYSTEM (BWR)
CH	RESIDUAL HEAT REMOVAL SYSTEM (BWR) [SPECIAL NON-EIIS CODE]
CI	RESIDUAL HEAT REMOVAL SYSTEM (PWR) [SPECIAL NON-EIIS CODE]

Hardware System Codes

Code	Description
DA	FUEL POOL COOLING AND PURIFICATION SYSTEM
DB	NUCLEAR FUEL SERVICES SYSTEM
DC	DIESEL FUEL OIL SYSTEM
DE	FUEL OIL RECEIVING, STORAGE, AND TRANSFER SYSTEM
DF	NUCLEAR FUEL TRANSFER SYSTEM
EA	MEDIUM-VOLTAGE POWER SYSTEM (601V THROUGH 35 KV)
EB	MEDIUM-VOLTAGE POWER SYSTEM - CLASS 1E
EC	LOW-VOLTAGE POWER SYSTEM (600V AND LESS)
ED	LOW-VOLTAGE POWER SYSTEM - CLASS 1E
EE	INSTRUMENT AND UNINTERRUPTIBLE POWER SYSTEM
EF	INSTRUMENT AND UNINTERRUPTIBLE POWER SYSTEM - CLASS 1E
EI	DC POWER SYSTEM
EJ	DC POWER SYSTEM - CLASS 1E
EK	EMERGENCY ONSITE POWER SUPPLY SYSTEM
EL	MAIN GENERATOR OUTPUT POWER SYSTEM
EX	AC POWER (SPECIAL NON-EIIS CODE)
FA	CABLE RACEWAY SYSTEM
FB	CATHODIC PROTECTION SYSTEM
FC	GROUNDING AND LIGHTNING PROTECTION SYSTEM
FD	HEAT TRACING SYSTEM
FE	HEAT TRACING SYSTEM - CLASS 1E
FF	NORMAL AC LIGHTING SYSTEM
FG	STANDBY AC LIGHTING SYSTEM
FH	EMERGENCY DC LIGHTING SYSTEM
FI	COMMUNICATIONS SYSTEM
FJ	STATION GENERATION TELEMETERING SYSTEM
FK	SWITCHYARD SYSTEM
IA	SECURITY SYSTEM
IB	ANNUNCIATOR SYSTEM
IC	FIRE DETECTION SYSTEM
ID	COMPUTER SYSTEM
IG	INCORE/EXCORE NEUTRON MONITORING SYSTEM
IH	CORE VIBRATION MONITORING SYSTEM
II	LOOSE PARTS MONITORING SYSTEM
IJ	LEAK MONITORING SYSTEM
IK	CONTAINMENT ENVIRONMENTAL MONITORING SYSTEM
IL	RADIATION MONITORING SYSTEM
IM	TEMPERATURE MONITORING SYSTEM
IN	SEISMIC MONITORING SYSTEM
IO	PERFORMANCE MONITORING SYSTEM
IP	POST-ACCIDENT MONITORING SYSTEM

Hardware System Codes

Code	Description
IQ	SEQUENCE OF EVENTS MONITORING SYSTEM
IR	TELEVISION SYSTEM
IS	ENVIRONMENTAL/METEOROLOGICAL MONITORING SYSTEM
IT	MAIN TURBINE INSTRUMENTATION SYSTEM
IU	DISPLAY CONTROL SYSTEM
IV	VIBRATION MONITORING SYSTEM
JA	INTEGRATED CONTROL SYSTEM
JB	FEEDWATER/STEAM GENERATOR WATER LEVEL CONTROL SYSTEM
JC	PLANT PROTECTION SYSTEM
JD	REACTOR POWER CONTROL SYSTEM
JE	ENGINEERED SAFETY FEATURES ACTUATION SYSTEM
JF	TOXIC GAS ISOLATION SYSTEM [SPECIAL NON-EIIS CODE]
JG	SOLID STATE CONTROL SYSTEM/AUXILIARY LOGIC CONTROL SYSTEM
JI	TURBINE STEAM BYPASS CONTROL SYSTEM
JK	FEEDWATER PUMP TURBINE INSTRUMENTATION AND CONTROL SYSTEM
JL	PANELS SYSTEM
JM	CONTAINMENT ISOLATION CONTROL SYSTEM
JN	LOW TEMP/OVERPRESSURE PROTECTION SYSTEM (PWR) [SPECIAL NON-EIIS CODE]
JR	RECIRCULATION ACTUATION SYSTEM [SPECIAL NON-EIIS CODE]
JS	ANTICIPATED TRANSIENT W/O SCRAM SYSTEM (BWR) [SPECIAL NON-EIIS CODE]
JT	STEAM AND FEEDWATER RUPTURE CONTROL SYSTEM (B&W) [SPL NON-EIIS CODE]
JU	FEED ONLY GOOD STEAM GENERATOR SYSTEM (B&W) [SPL NON-EIIS CODE]
KA	CONDENSATE STORAGE AND TRANSFER SYSTEM
KB	TURBINE BUILDING CLOSED COOLING WATER SYSTEM
KC	DEMINERALIZED WATER STORAGE AND TRANSFER SYSTEM
KD	CONDENSATE AND FEEDWATER CHEMISTRY CONTROL SYSTEM
KE	HEAT REJECTION SYSTEM
KF	HEAT REJECTION CHEMICAL TREATMENT SYSTEM
KG	NONESSENTIAL SERVICE WATER SYSTEM
KH	WATER FILTRATION SYSTEM
KI	RAW WATER MAKEUP SYSTEM
KJ	MAKEUP DEMINERALIZER SYSTEM
KK	PORTABLE WATER DISTRIBUTION SYSTEM
KL	REMOVAL CHEMICAL CLEANING SYSTEM
KM	CHILLED WATER SYSTEM
KN	SAMPLING AND WATER QUALITY SYSTEM
KO	GLAND SEAL WATER SUPPLY SYSTEM
KP	FIRE PROTECTION SYSTEM (WATER)
KQ	FIRE PROTECTION SYSTEM (CHEMICAL)
KR	FIRE PROTECTION SYSTEM (PASSIVE) [SPECIAL NON-EIIS CODE]
KS	REACTOR WATER STORAGE TANK [SPECIAL NON-EIIS CODE]

Hardware System Codes

Code	Description
LA	DIESEL LUBE OIL SYSTEM
LB	DIESEL COOLING WATER SYSTEM
LC	DIESEL GENERATOR STARTING AIR SYSTEM
LD	INSTRUMENT AIR SUPPLY SYSTEM
LE	ESSENTIAL AIR SYSTEM
LF	SERVICE AIR SYSTEM
LG	WELDING GAS SYSTEM
LH	BREATHING AIR SYSTEM
LJ	HYDROGEN SUPPLY SYSTEM
LK	NITROGEN SUPPLY SYSTEM
LL	LUBE OIL SYSTEM
LM	LUBE OIL STORAGE AND TRANSFER SYSTEM
LN	INSULATING OIL SYSTEM
LP	LABORATORY GAS SYSTEM
LQ	LABORATORY EQUIPMENT SYSTEM
LR	MATERIAL AND EQUIPMENT HANDLING SYSTEM
LS	PLANT SHOP SYSTEM
LT	RECORD STORAGE SYSTEM
LU	YARD HANDLING AND MAINTENANCE SYSTEM
LV	PLANT HOT WATER SYSTEM
LW	CARBON DIOXIDE SUPPLY SYSTEM
MA	ADMINISTRATION BUILDING
MB	INDUSTRIAL/SANITARY WASTE TREATMENT BUILDING
MC	MAINTENANCE AND WAREHOUSE BUILDING
MD	MAKEUP WATER INTAKE STRUCTURE
MF	SERVICE BUILDING
MG	WASTEWATER OUTFALL STRUCTURE
MH	WATER TREATMENT BUILDING
MJ	VISITORS CENTER
MK	ESSENTIAL SERVICE WATER PUMP BUILDING
MS	MAIN STEAM ISOLATION VALVES [SPECIAL NON-EIIS CODE]
NA	CONTROL BUILDING/CONTROL COMPLEX
NB	EMERGENCY ONSITE POWER SUPPLY BUILDING
NC	EMERGENCY OPERATIONS FACILITY (OFFSITE)
ND	FUEL BUILDING
NE	RADWASTE BUILDING
NF	AUXILIARY BUILDING
NG	REACTOR BUILDING (BWR)
NH	REACTOR CONTAINMENT BUILDING
NM	TURBINE BUILDING
NN	CIRCULATING WATER STRUCTURES
NO	NO SYSTEMS INVOLVED [SPECIAL NON-EIIS CODE]

Hardware System Codes

Code	Description
NP	PRIMARY CONTAINMENT [SPECIAL NON-EIIS CODE]
NS	SECONDARY CONTAINMENT [SPECIAL NON-EIIS CODE]
NT	DRYWELL (SPECIAL NON-EIIS CODE)
PM	PLANT MANAGEMENT [SPECIAL NON-EIIS CODE]
PS	PLANT STAFFING [SPECIAL NON-EIIS CODE]
SA	AUXILIARY STEAM SYSTEM
SB	MAIN/REHEAT STEAM SYSTEM
SD	CONDENSATE SYSTEM
SE	STEAM EXTRACTION SYSTEM
SF	CONDENSATE DEMINERALIZER SYSTEM
SG	CONDENSER SYSTEM
SH	CONDENSER VACUUM SYSTEM
SI	CONDENSER TUBE CLEANING SYSTEM
SJ	FEEDWATER SYSTEM
SK	FEEDWATER PUMP INJECTION AND MISCELLANEOUS SYSTEM
SL	FEEDWATER PUMP TURBINE LUBE OIL SYSTEM
SM	LP HEATER DRAINS AND VENTS SYSTEM
SN	HP HEATER AND MSR DRAINS AND VENTS SYSTEM
TA	MAIN TURBINE SYSTEM
TB	MAIN GENERATOR SYSTEM
TC	TURBINE STEAM SEAL SYSTEM
TD	TURBINE LUBE OIL SYSTEM
TE	MISCELLANEOUS TURBINE VENTS SYSTEM
TF	TURBINE DRAINS AND MISCELLANEOUS PIPING SYSTEM
TG	MAIN TURBINE CONTROL FLUID SYSTEM
TH	MAIN GENERATOR GAS PURGE SYSTEM
TI	MAIN GENERATOR SEAL OIL SYSTEM
TJ	MAIN GENERATOR STATOR COOLING SYSTEM
TK	MAIN GENERATOR HYDROGEN COOLING SYSTEM
TL	MAIN GENERATOR EXCITATION SYSTEM
UA	PUMPING STATION ENVIRONMENTAL CONTROL SYSTEM
UB	WATER TREATMENT BUILDING ENVIRONMENTAL CONTROL SYSTEM
UC	SERVICE BUILDING ENVIRONMENTAL CONTROL SYSTEM
UD	ADMINISTRATION BUILDING ENVIRONMENTAL CONTROL SYSTEM
UE	SECURITY BUILDING ENVIRONMENTAL CONTROL SYSTEM
UF	TECHNICAL SUPPORT CENTER ENVIRONMENTAL CONTROL SYSTEM
UG	EMERGENCY OPERATIONS FACILITY ENVIRONMENTAL CONTROL SYSTEM
UH	VISITORS CENTER ENVIRONMENTAL CONTROL SYSTEM
VA	REACTOR BUILDING ENVIRONMENTAL CONTROL SYSTEM
VB	DRYWELL ENVIRONMENTAL CONTROL SYSTEM (BWR)

Hardware System Codes

Code	Description
VC	SHIELD ANNULUS RETURN AND EXHAUST SYSTEM
VE	ACCESS CORRIDORS ENVIRONMENTAL CONTROL SYSTEM
VF	AUXILIARY BUILDING ENVIRONMENTAL CONTROL SYSTEM
VG	FUEL BUILDING ENVIRONMENTAL CONTROL SYSTEM
VH	RADWASTE BUILDING ENVIRONMENTAL CONTROL SYSTEM
VI	CONTROL BUILDING/CONTROL COMPLEX ENVIRONMENTAL CONTROL SYSTEM
VJ	EMERGENCY ONSITE POWER SUPPLY BUILDING ENVIRONMENTAL CONTROL SYSTEM
VK	TURBINE BUILDING ENVIRONMENTAL CONTROL SYSTEM
VL	PLANT EXHAUST SYSTEM
WA	CASK DECONTAMINATION SYSTEM
WB	SOLID WASTE MANAGMENT SYSTEM
WD	LIQUID WASTE MANAGEMENT SYSTEM
WE	GASEOUS WASTE MANAGEMENT SYSTEM (PWR)
WF	OFFGAS SYSTEM (BWR)
WG	SANITARY WASTE PROCESSING SYSTEM
WH	WASTEWATER DISPOSAL SYSTEM
WI	STEAM GENERATOR BLOWDOWN SYSTEM (PWR)
WJ	SLUDGE WASTE DEWATERING SYSTEM
WK	EQUIPMENT AND FLOOR DRAIN SYSTEM
XC	ECCS (SPECIAL NON-EIIS CODE)
XX	OTHER KNOWN SYSTEM - SEE COMMENT FIELD [SPECIAL NON-EIIS CODE]
XY	MULTIPLE KNOWN SYSTEM - SEE COMMENT FIELD [SPECIAL NON-EIIS CODE]
ZP	PRIMARY CONTAINMENT - UNDETERMINED SYSTEM [SPECIAL NON-EIIS CODE]
ZS	SECONDARY CONTAINMENT - UNDETERMINED SYSTEM [SPECIAL NON-EIIS CODE]
ZZ	UNKNOWN SYSTEM [SPECIAL NON-EIIS CODE]

APPENDIX B

MECHANICAL COMPONENT DESIGN CODES

Mechanical Component Design Codes

Code	Description
ACC	Accumulators (closed, pressurized)
ACCUM	Accumulators (closed, pressurized)
ACU	Air Conditioning Units/Chillers
ACUCS	Chillers
ACUCU	Air Conditioning Units
ADY	Air Dryers
ADYAB	Absorption
ADYAD	ADYsorption
ADYHL	Heatless
ADYHR	Heat Reactivated
ADYRF	Refrigerated
ADYXX	Unknown
ADYZZ	Other
BLC	Blowers/Compressors
BLCBL	Blowers
BLCGC	Gas Circulator
BLCMP	Compressors
BLCSC	Superchargers
BLCTC	Turbochargers
BLCXX	Unknown
BLCZZ	Other
CON	Control Rods
CONRD	Control Rods
CRD	Control Rod Drives
CRDRV	Control Rod Drives
CTM	Controllers, Mechanical
CTMHY	Hydraulic
CTMMC	Mechanical
CTMPN	Pneumatic
CTMXX	Unknown
CTMZZ	Other
DEM	Demineralizers
DEMAN	Anion
DEMCA	Cation
DEMMB	Mixed Bed
DEMPR	Powdered Resin
DEMXX	Unknown

Mechanical Component Design Codes

Code	Description
DEMZZ	Other
DPA	Dampers, Pneumatic Operator
DPAOB	Opposed Blade
DPAPB	Parallel Blade
DPAPL	Proportioning Louver
DPASB	Single Blade
DPAXX	Unknown
DPAZZ	Other
DPH	Dampers, Hydraulic Operator
DPHOB	Opposed Blade
DPHPB	Parallel Blade
DPHPL	Proportioning Louver
DPHSB	Single Blade
DPHXX	Unknown
DPHZZ	Other
DPM	Dampers, Motor Operator
DPMOB	Opposed Blade
DPMPB	Parallel Blade
DPMPL	Proportioning Louver
DPMSB	Single Blade
DPMXX	Unknown
DPMZZ	Other
DPN	Dampers, Exclusive of Operators
DPNOB	Opposed Blade
DPNPB	Parallel Blade
DPNPL	Proportioning Louver
DPNSB	Single Blade
DPNXX	Unknown
DPNZZ	Other
DPO	Dampers, Manual Operator
DPOOB	Opposed Blade
DPOPB	Parallel Blade
DPOPL	Proportioning Louver
DPOSB	Single Blade
DPOXX	Unknown
DPOZZ	Other
DPX	Dampers, Unknown Operator
DPXOB	Opposed Blade
DPXPB	Parallel Blade

Mechanical Component Design Codes

Code	Description
DPXPL	Proportioning Louver
DPXSB	Single Blade
DPXXX	Unknown
DPXZZ	Other
DPZ	Dampers, Other Operator
DPZOB	Opposed Blade
DPZPB	Parallel Blade
DPZPL	Proportioning Louver
DPZSB	Single Blade
DPZXX	Unknown
DPZZZ	Other
EDJ	Eductors/Ejectors
EDJEC	Ejectors
EDJUC	Eductors
ENG	Engines
ENGDG	Diesel
ENGGE	Gasoline
ENGXX	Unknown
ENGZZ	Other
FCU	Fan Cooler Units
FCUFC	Fan Cooler Units
FIT	Fittings
FITAG	Angle
FITCP	Coupling
FITEL	Elbow
FITFG	Flange
FITNP	Nipple
FITPG	Plug
FITRD	Reducer
FITTB	Tubing
FITTE	Tee (T)
FITUN	Union
FITWL	Well, Process Monitor
FITYE	Wye (Y)
FITZZ	Other
FLT	Filters
FLTCC	Charcoal
FLTHE	HEPA
FLTXX	Unknown

Mechanical Component Design Codes

Code	Description
FLTZZ	Other
FUE	Fuel Assemblies (fuel elements)
FUELA	Fuel Assemblies (fuel elements)
FVN	Fans, Ventilators
FVNFN	Fans
FVNVT	Ventilators
HTX	Heat Exchangers
HTXBL	Boiler
HTXCD	Condenser
HTXCO	Cooler
HTXEV	Evaporator
HTXHT	Heater
HTXIC	Ice Condenser
HTXSG	Steam Generator
HTXSH	Superheater
HTXXX	Unknown
HTXZZ	Other
MFI	Mechanical Function Items
MFIBR	Brake
MFICL	Clutch
MFICP	Coupling
MFIGV	Governor
MFITI	Timer
MFIZZ	Other
MPI	Miscellaneous Piping Items
MPIDF	Diaphragm
MPINZ	Nozzle
MPIOR	Orifice
MPIRD	Rupture Disc
MPISL	Sensing Line
MPP	Mechanical Piece Parts
MPPBR	Bearing/Bushing
MPPBT	Belt
MPPFS	Fastener
MPPGR	Gear
MPPHO	Hose
MPPZZ	Other

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Mechanical Component Design Codes

Code	Description
MTM	Motors, Mechanical
MTMHY	Hydraulic
MTMPN	Pneumatic
PEN	Penetrations
PENAC	Access
PENEL	Electrical
PENEQ	Equipment
PENFU	Fuel
PENHD	Handling
PENIN	Instrument
PENPP	Piping
PENPR	Personnel
PENXX	Unknown
PENZZ	Other
PIP	Pipe
PIPLG	Pipe, >= 3 Inches, ID
PIPSM	Pipe, < 3 Inches, ID
PIPXX	Pipe, unknown size
PPD	Pumps, Diesel Driven
PPDAX	Axial
PPDCF	Centrifugal
PPDDP	Diaphragm
PPDGR	Gear
PPDRD	Radial
PPDRP	Reciprocating
PPDRT	Rotary
PPDVN	Vane
PPDXX	Unknown
PPDZZ	Other
PPE	Pump, Electromagnetic
PPEMP	Pump, Electromagnetic
PPJ	Pump, Jet
PPJMP	Pump, Jet
PPM	Pumps, Motor Driven
PPMAX	Axial
PPMCF	Centrifugal
PPMDP	Diaphragm
PPMGR	Gear

Mechanical Component Design Codes

Code	Description
PPMRD	Radial
PPMRP	Reciprocating
PPMRT	Rotary
PPMVN	Vane
PPMXX	Unknown
PPMZZ	Other
PPN	Pumps, Exclusive of Drivers
PPNAX	Axial
PPNCF	Centrifugal
PPNDP	Diaphragm
PPNGR	Gear
PPNRD	Radial
PPNRP	Reciprocating
PPNRT	Rotary
PPNVN	Vane
PPNXX	Unknown
PPNZZ	Other
PPT	Pumps, Steam Turbine Driven
PPTAX	Axial
PPTCF	Centrifugal
PPTDP	Diaphragm
PPTGR	Gear
PPTRD	Radial
PPTRP	Reciprocating
PPTRT	Rotary
PPTVN	Vane
PPTXX	Unknown
PPTZZ	Other
PPV	Pumps, Vacuum
PPVCP	Cryopump
PPVDP	Diffusion
PPVIP	Ion
PPVMP	Mechanical
PPVSP	Sorption
PPVTM	Turbomolecular
PPVXX	Unknown
PPVZZ	Other
PPX	Pumps, Unknown Driver
PPXAX	Axial
PPXCF	Centrifugal
PPXDP	Diaphragm

Mechanical Component Design Codes

Code	Description
PPXGR	Gear
PPXRD	Radial
PPXRP	Reciprocating
PPXRT	Rotary
PPXVN	Vane
PPXXX	Unknown
PPXZZ	Other
PPZ	Pumps, Other Driver
PPZAX	Axial
PPZCF	Centrifugal
PPZDP	Diaphragm
PPZGR	Gear
PPZRD	Radial
PPZRP	Reciprocating
PPZRT	Rotary
PPZVN	Vane
PPZXX	Unknown
PPZZZ	Other
REC	Recombiners
RECCT	Catalytic
RECFL	Flame
RECTM	Thermal
RECXX	Unknown
RECZZ	Other
RES	Reservoirs (open, not pressurized)
RESVR	Reservoirs (open, not pressurized)
SFI	Structural Function Items
SFIAK	Anchors
SFIEJ	Expansion Joints
SFIHG	Hangers
SFISB	Snubbers
SFISU	Supports
SFIXX	Unknown
SFIZZ	Other
STR	Strainers
STRDU	Duplex
STRSC	Self-cleaning
STRSP	Simplex
STRSS	Screens, Stationary
STRST	Screens, Traveling

Mechanical Component Design Codes

Code	Description
STRXX	Unknown
STRZZ	Other
TAN	Tanks (closed, not pressurized)
TANKS	Tanks (closed, not pressurized)
TRA	Train (Series of Mechanical/Electrical Components)
TRAIN	Train (Series of Mechanical/Electrical Components)
TRB	Turbines
TRBCB	Combustion
TRBHY	Hydro
TRBST	Steam
TRBXX	Unknown
TRBZZ	Other
VLC	Valves, Check
VLCHY	Hydraulic Operator
VLCMN	Manual Operator (mechanical handweel)
VLCMO	Motor Operator
VLCNO	No Operator
VLCNT	No Operator (tilting disk check valve)
VLCPN	Pneumatic Operator
VLCXX	Unknown Operator
VLCZZ	Other Operator
VLD	Valves, Mechanical (dp/spring) Operator
VLDAN	Angle
VLDBF	Butterfly
VLDBL	Ball
VLDDP	Diaphragm
VLDGL	Globe
VLDGT	Gate
VLDND	Needle
VLDPL	Plug
VLDXX	Unknown
VLDZZ	Other
VLE	Valves, Explosive Operator (squib)
VLEAN	Angle
VLEBF	Butterfly
VLEBL	Ball
VLEDP	Diaphragm
VLEGL	Globe
VLEGT	Gate

Mechanical Component Design Codes

Code	Description
VLEND	Needle
VLEPL	Plug
VLEXX	Unknown
VLEZZ	Other
VLF	Valves, Float Operator
VLFAN	Angle
VLFBF	Butterfly
VLFBL	Ball
VLFDP	Diaphragm
VLFGL	Globe
VLFGT	Gate
VLFND	Needle
VLFPL	Plug
VLFXX	Unknown
VLFZZ	Other
VLH	Valves, Hydraulic Operator
VLHAN	Angle
VLHBF	Butterfly
VLHBL	Ball
VLHDP	Diaphragm
VLHGL	Globe
VLHGT	Gate
VLHND	Needle
VLHPL	Plug
VLHXX	Unknown
VLHZZ	Other
VLM	Motor Operator
VLMAN	Angle
VLMBF	Butterfly
VLMBL	Ball
VLMDP	Diaphragm
VLMGL	Globe
VLMGT	Gate
VLMND	Needle
VLMPL	Plug
VLMXX	Unknown
VLMZZ	Other
VLN	Valves, Exclusive of Operators
VLNAN	Angle
VLNBF	Butterfly
VLNBL	Ball

Mechanical Component Design Codes

Code	Description
VLNDP	Diaphragm
VLNGL	Globe
VLNGT	Gate
VLNND	Needle
VLNPL	Plug
VLNXX	Unknown
VLNZZ	Other
VLO	Valves, Manual Operator (mechanical handwheel)
VLOAN	Angle
VLOBF	Butterfly
VLOBL	Ball
VLODP	Diaphragm
VLOGL	Globe
VLOGT	Gate
VLOND	Needle
VLOPL	Plug
VLOXX	Unknown
VLOZZ	Other
VLP	Pneumatic Operator
VLPAN	Angle
VLPBF	Butterfly
VLPBL	Ball
VLPDP	Diaphragm
VLPGL	Globe
VLPGT	Gate
VLPND	Needle
VLPPL	Plug
VLPXX	Unknown
VLPZZ	Other
VLR	Valves, Relief
VLRDA	Direct Acting
VLRPI	Indirect Acting, Pilot Operated
VLRPW	Indirect Acting, Power Operated
VLRPX	Indirect Acting, Unknown Operator
VLRPZ	Indirect Acting, Other Operator
VLRXX	Unknown
VLRZZ	Other
VLS	Solenoid Operator
VLSAN	Angle
VLSBF	Butterfly
VLSBL	Ball

Mechanical Component Design Codes

Code	Description
VLSDP	Diaphragm
VLSGL	Globe
VLSGT	Gate
VLSND	Needle
VLSPL	Plug
VLSXX	Unknown
VLSZZ	Other
VLV	Valves, Vacuum Breakers
VLVBK	Valves, Vacuum Breakers
VLX	Unknown Operator
VLXAN	Angle
VLXBF	Butterfly
VLXBL	Ball
VLXDP	Diaphragm
VLXGL	Globe
VLXGT	Gate
VLXND	Needle
VLXPL	Plug
VLXXX	Unknown
VLZ	Other Operator
VLZAN	Angle
VLZBF	Butterfly
VLZBL	Ball
VLZDP	Diaphragm
VLZGL	Globe
VLZGT	Gate
VLZND	Needle
VLZPL	Plug
VLZXX	Unknown
VOP	Valve Operators
VOPDO	Mechanical (dp/spring) Operator
VOPEO	Explosive Operator (Squib)
VOPFO	Float Operator
VOPHO	Hydraulic Operator
VOPMO	Motor Operator
VOPNO	Manual Operator (mechanical handwheel)
VOPPO	Pneumatic Operator
VOPSO	Solenoid Operator
VOPXO	Unknown Operator
VOPZO	Other Operator

Mechanical Component Design Codes

Code	Description
VSL	Vessels (closed, pressurized)
VSLCD	Containment/Drywell
VSLPZ	Pressurizer
VSLRV	Reactor Vessel
VSLSP	Suppression Pool/Wetwell
VSLTO	Torus
VSLXX	Unknown
VSLZZ	Other

APPENDIX C

ELECTRICAL COMPONENT DESIGN CODES

Electrical Component Design Codes

Code	Description
ABT	Automatic Transfer Switches
ABTSS	Solid-state
ABTXX	Unknown
ABTZZ	Other
AMP	Amplifiers
AMPCA	Current
AMPIA	Isolation
AMPPA	Power
AMPVA	Voltage
AMPXX	Unknown
AMPZZ	Other
ANN	Annunciators
ANNAD	Audio
ANNAV	Audiovisual
ANNVS	Visual
ANNXX	Unknown
ANNZZ	Other
BAT	Batteries
BATDC	Dry Cell (e.g., Nickel-cadmium)
BATWC	Wet Cell (e.g., lead-acid)
BATXX	Unknown
BATZZ	Other
BCH	Charger, Battery
BCHGR	Charger, Battery
CBM	Circuit Breakers, Molded Case
CBMSS	Solid-state Trip
CBMTM	Thermal-magnetic Trip
CBMXX	Unknown
CBMZZ	Other
CBP	Circuit Breakers, Power
CBPAM	Air-magnetic
CBPOL	Oil
CBPSS	Solid-state
CBPVC	Vacuum
CBPXX	Unknown
CBPZZ	Other

Electrical Component Design Codes

Code	Description
CHA	Channel (Series of Instrumentation Components)
CHANL	Channel (Series of Instrumentation Components)
CND	Conductors
CNDBS	Bus
CNDCC	Cable, Control
CNDPC	Cable, Power
CNDWI	Wire
CNDXX	Unknown
CNDZZ	Other
COM	Computation Modules
COMAU	Auctioneer
COMAV	Averagers
COMCA	Calculators
COMCN	Converters
COMCR	Comparators
COMDI	Differentiators
COMFG	Function Generators
COMIN	Integrators/Totalizers
COMMD	Modifiers
COMSM	Summers
COMXX	Unknown
COMZZ	Other
CPU	Computers
CPUAN	Analog
CPUDL	Digital, Mainframe
CPUHB	Hybrid
CPUPC	Digital, Micro/PC
CPUXX	Unknown
CPUZZ	Other
CRC	Circuit, Control
CRCNT	Circuit, Control
CTE	Controllers/Regulators, Non-mechanical
CTEEA	Electronic, Analog
CTEED	Electronic, Digital
CTEEL	Electrical
CTEEM	Electromagnetic
CTEHD	Electrohydraulic
CTEMC	Electromechanical
CTEPD	Electronic, Programmable Digital

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Electrical Component Design Codes

Code	Description
CTEPN	Electropneumatic
CTEXX	Unknown
CTEZZ	Other
DSP	Displays
DSPCR	Cathode-ray Tube
DSPEL	Electroluminescent
DSPLC	Liquid-crystal
DSPLD	Light-emitting Diode
DSPXX	Unknown
DSPZZ	Other
EFI	Electrical Function Items
EFICA	Card
EFICB	Circuit Board
EFICC	Circuit Card Carrier
EFICD	Conduit
EFICN	Connector
EFICR	Contactor
EFICT	Cable Tray
EFIDC	Disconnect
EFIFN	Fan, Cooling
EFILS	Sequencer, Load
EFIMS	Switch, micro
EFIPN	Panel
EFITM	Timer
EFIZZ	Other
EPP	Electrical Piece Parts
EPPCL	Coil
EPPCP	Capacitor
EPPCT	Contacts
EPPDI	Diode/Rectifier
EPPIC	Integrated Circuit (IC)
EPPID	Inductor
EPPRE	Resistor
EPPTI	Transformer, Internal Power
EPPTR	Transistor
EPPTS	Transformer, Signal
EPPTY	Thyristor (SCR, TRIAC, GTO device)
EPPZZ	Other
FUS	Fuse
FUSCN	Fuse, Control
FUSPW	Fuse, Power

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Electrical Component Design Codes

Code	Description
GND	Generator, with Diesel Engine Driver
GNDAL	Alternator
GNDAP	Amplidyne
GNDCN	Converter
GNDDY	Dynamotor
GNDGN	Generator
GNDXX	Unknown
GNDZZ	Other
GNG	Generator, with Gasoline Engine Driver
GNGAL	Alternator
GNGAP	Amplidyne
GNGCN	Converter
GNGDY	Dynamotor
GNGGN	Generator
GNGXX	Unknown
GNGZZ	Other
GNH	Generator, with Hydro Turbine Driver
GNHAL	Alternator
GNHAP	Amplidyne
GNHCN	Converter
GNHDY	Dynamotor
GNHGN	Generator
GNHXX	Unknown
GNHZZ	Other
GNM	Generator, with Motor Driver
GNMAL	Alternator
GNMAP	Amplidyne
GNMCN	Converter
GNMDY	Dynamotor
GNMGN	Generator
GNMXX	Unknown
GNMZZ	Other
GNN	Generators, Exclusive of Drivers
GNNAL	Alternator
GNNAP	Amplidyne
GNNCN	Converter
GNNDY	Dynamotor
GNNGN	Generator
GNNXX	Unknown
GNNZZ	Other

Electrical Component Design Codes

Code	Description
GNS	Generator, with Gas Turbine Driver
GNSAL	Alternator
GNSAP	Amplidyne
GNSCN	Converter
GNSDY	Dynamotor
GNSGN	Generator
GNSXX	Unknown
GNSZZ	Other
GNT	Generator, with Steam Turbine Driver
GNTAL	Alternator
GNTAP	Amplidyne
GNTCN	Converter
GNTDY	Dynamotor
GNTGN	Generator
GNTXX	Unknown
GNTZZ	Other
GNX	Generator, with Unknown Driver
GNXAL	Alternator
GNXAP	Amplidyne
GNXCN	Converter
GNXDY	Dynamotor
GNXGN	Generator
GNXXX	Unknown
GNXZZ	Other
GNZ	Generator, with Other Driver
GNZAL	Alternator
GNZAP	Amplidyne
GNZCN	Converter
GNZDY	Dynamotor
GNZGN	Generator
GNZXX	Unknown
GNZZZ	Other
HTR	Heaters
HTRHT	Heat Tracing
HTRIM	Immersion
HTRXX	Unknown
HTRZZ	Other
IND	Indicators
INDAN	Analog

Electrical Component Design Codes

Code	Description
INDDG	Digital
INDXX	Unknown
INDZZ	Other
LOG	Logic Modules
LOGIC	Logic Modules
MOT	Motors, Electrical
MOTCM	Commutator, DC
MOTIS	Induction, Squirrel-cage, AC
MOTIW	Induction, Wound-rotor, AC
MOTPM	Permanent Magnet, DC
MOTSB	Synchronous, Brushless, AC
MOTSR	Synchronous, Reluctance, AC
MOTSS	Synchronous, Slip-ring, AC
MOTXX	Unknown
MOTZZ	Other
MTC	Motor Controls
MTCCE	Controller, AC Wound-rotor, Electromechanical
MTCCF	Controller, AC Adjustable-frequency
MTCCS	Controller, AC Wound-rotor, Solid-state
MTCCV	Controller, DC Adjustable-voltage
MTCCX	Controller, Unknown
MTCCZ	Controller, Other
MTCSM	Combination Starter, Electromechanical
MTCSS	Combination Starter, Solid-state
MTCSX	Combination Starter, Unknown
MTCSZ	Combination Starter, Other
PWS	Power Electronics (Solid-state)
PWSEX	Exciter
PWSFC	Frequency Converter
PWSIN	Inverter (except motor controllers)
PWSRC	Rectifier,Ctrld w/SCRs;except exciters & mtr ctlrs
PWSRU	Rectifier, Uncontrolled
PWSUP	Uninterruptible Power Supply
PWSXX	Unknown
PWSZZ	Other
RCD	Recorders
RCDEE	Electrical/Electronic
RCDPN	Pneumatic
RCDXX	Unknown
RCDZZ	Other

Electrical Component Design Codes

Code	Description
RLC	Relays, Control
RLCEM	Electromechanical
RLCEP	Electropneumatic
RLCMW	Mercury Wetted
RLCPN	Pneumatic
RLCRD	Reed
RLCSM	Solid-state/Mechanical
RLCSS	Solid-state
RLCXX	Unknown
RLCZZ	Other
RLP	Relays, Protective
RLPEM	Electromechanical
RLPEP	Electropneumatic
RLPMW	Mercury Wetted
RLPPN	Pneumatic
RLPRD	Reed
RLPSM	Solid-state/Mechanical
RLPSS	Solid-state
RLPXX	Unknown
RLPZZ	Other
SEN	Transducers (Detectors/Elements/Sensors)
SENDT	Detectors
SENEL	Elements
SENSN	Sensors
SWC	Switches, Control
SWCKY	Key
SWCPB	Push-button
SWCRT	Rotary
SWCSL	Selector
SWCTW	Thumb-wheel
SWCXX	Unknown
SWCZZ	Other
SWP	Switches, Power
SWPSP	Single-phase
SWPTD	Three-phase Duplex
SWPTG	Three-phase Ganged
SWPXX	Unknown
SWPZZ	Other

Electrical Component Design Codes

Code	Description
XMT	Transmitters
XMTRS	Transmitters
XTC	Transformers, Control and Instrumentation
XTCCP	Control Power
XTCCR	Current
XTCDR	Differential/Regulating
XTCIS	Isolation
XTCTC	Transducer/Coupling
XTCVP	Voltage (potential)
XTCVR	Voltage-regulating
XTCVV	Variable Voltage
XTCXX	Unknown
XTCZZ	Other
XTP	Transformers, Power
XTPGC	Gas-cooled
XTPLC	Liquid-cooled
XTPXX	Unknown
XTPZZ	Other

APPENDIX D

HARDWARE COMPONENT FAILURE SOURCE DATA

```
MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Air Conditioning Units/Chillers
      Design: Air Conditioning Units
Normal State: Normally Running
Failure Mode: Fails to Operate                          Data Record Number:   1

----------------------------NUCLARR-CALCULATED-RATES-----------------------------
  Median:  1.464E-005  Upper Tolerance:  4.779E-005   Aggregation Type: 1
  Mean  :  1.229E-005  Error Factor   :  3.265E+000

------------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
  Number of Failures     :      1        Number of Components  : ------
  Hours Per Component    : ------------  Demand Per Component  : --------
  Total Component Hours:         81351   Total Component Demand: --------

  Probability/Rate    :  7.500E-006      Type         : MEDIAN
  Variance            :  8.400E-011      Units        : F/H
  Standard Deviation : ------E----       Distribution : DISCRETE

                       ----Lower----   ----Upper----   -Confidence/Coverage-
  Confidence Bounds  : ------E----     ------E----                -- %
  Tolerance Bounds   :  1.300E-006      2.400E-005                90 %
        Error Factor : ------E----        Sided                   -- %

--------------------------------------------------------------------------------
Component          1: Unknown External Environment
Applications       2:
                   3:
--------------------------------------------------------------------------------
               Origin                          Record Type
Failure Data :  PLNT      PWWR-LERS-INCD-    -   -   -   -   -   -
Exposure Data:  PLNT      TSTR-PMTR-CRLB-    -   -   -   -   -   -

Data Collection Period:  75 through 80 (YY through YY)

Include Circuit? : U        Originating Facilities : NEE3-    -    -
Nuclear Origin?  : Y        Failure Degree    :
Bayesian Update? : Y        Failure Severity : C
IRADAP Suitable? : Y        Include System?   : I  Systems : VA-  -  -  -
Safety Grade?    : N
Primary Failure? : U    Subsys. train :

--------------------------- REFERENCE INFORMATION ------------------------------
  Document Number : 21281      Detail Reference : 5-21

----------------------------- ADDITIONAL COMMENTS -----------------------------
MEAN = 1.20E-05/H

--------------------------------------------------------------------------------
```

```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Air Conditioning Units/Chillers
         Design: Air Conditioning Units
   Normal State: Normally Running
   Failure Mode: Fails to Operate                         Data Record Number:   2

 ----------------------------NUCLARR-CALCULATED-RATES-----------------------------
     Median:  9.731E-006   Upper Tolerance:  7.750E-005   Aggregation Type: 1
     Mean   : +0.000E+000  Error Factor    :  7.964E+000

 ------------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------------
     Number of Failures   :       0        Number of Components   : ------
     Hours Per Component  : ------------   Demand Per Component   : --------
     Total Component Hours:       24175    Total Component Demand: --------

     Probability/Rate    :  4.200E-006     Type         : MEDIAN
     Variance            :  1.400E-010     Units        : F/H
     Standard Deviation  : ------E----     Distribution : DISCRETE

                            ---Lower---     ---Upper---    -Confidence/Coverage-
     Confidence Bounds   : ------E----     ------E----             -- %
     Tolerance Bounds    :  4.400E-007      2.400E-005             90 %
           Error Factor  : ------E----        Sided                -- %
 ---------------------------------------------------------------------------------
   Component          1: Unknown External Environment
   Applications       2:
                      3:
 ---------------------------------------------------------------------------------
                Origin                            Record Type
   Failure Data :  PLNT      PMWR-LERS-INCD-   -    -    -    -    -    -
   Exposure Data:  PLNT      TSTR-PMTR-CRLB-   -    -    -    -    -    -

   Data Collection Period:  75 through 80 (YY through YY)

   Include Circuit? : U         Originating Facilities : NEE3-
   Nuclear Origin?  : Y         Failure Degree    :
   Bayesian Update? : Y         Failure Severity : C
   IRADAP Suitable? : Y         Include System?  : I   Systems : VA-  -  -  -
   Safety Grade?    : N
   Primary Failure? : U     Subsys. train :
 ------------------------------- REFERENCE INFORMATION ---------------------------
     Document Number : 21281        Detail Reference : 5-21
 -------------------------------- ADDITIONAL COMMENTS ----------------------------
   MEAN = 9.40E-06/H

 ---------------------------------------------------------------------------------
```

```
              MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Air Conditioning Units/Chillers
      Design: Air Conditioning Units
Normal State: Normally Alternating
Failure Mode: Fails to Start                          Data Record Number:   1

------------------------- NUCLARR CALCULATED RATES -------------------------
  Median:  1.337E-002   Upper Tolerance:  2.940E-002   Aggregation Type: 1
  Mean  :  1.266E-002   Error Factor   :  2.199E+000

------------------- REFERENCE RAW and PROBABILITY DATA ---------------------
  Number of Failures   :      3         Number of Components  : ------
  Hours Per Component  : ------------   Demand Per Component  : --------
  Total Component Hours: ------------   Total Component Demand:      237

  Probability/Rate   :  3.700E-003      Type         : MEDIAN
  Variance           :  1.800E-005      Units        : F/D
  Standard Deviation : ------E----      Distribution : DISCRETE

                        ---Lower---      ---Upper---    -Confidence/Coverage-
  Confidence Bounds  : ------E----      ------E----            -- %
  Tolerance Bounds   :  7.800E-004       1.200E-002             90 %
        Error Factor : ------E----         Sided                -- %

----------------------------------------------------------------------------
Component           1: Unknown External Environment
Applications        2:
                    3:
----------------------------------------------------------------------------
                 Origin                         Record Type
Failure Data :    PLNT       PMMR-LERS-INCD-    -    -    -    -    -    -
Exposure Data:    PLNT       TSTR-PMTR-CRLB-    -    -    -    -    -    -

Data Collection Period:  75 through 80 (YY through YY)

Include Circuit? : U          Originating Facilities : NEE3-    -    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : Y          Failure Severity : C
IRADAP Suitable? : Y          Include System?  : I  Systems : VA-  -  -  -
Safety Grade?    : N
Primary Failure? : U     Subsys. train :

-------------------------- REFERENCE INFORMATION ---------------------------
  Document Number : 21281       Detail Reference : 5-21

--------------------------- ADDITIONAL COMMENTS ----------------------------
MEAN = 5.70E-03/D

----------------------------------------------------------------------------
```

```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Dampers, Unknown Operator
        Design: Unknown
  Normal State: Normally Alternating
  Failure Mode: Fails to Operate                      Data Record Number:   1

 ---------------------------NUCLARR-CALCULATED-RATES----------------------------
    Median:  2.747E-003   Upper Tolerance:  6.095E-003   Aggregation Type: 1
    Mean  :  2.597E-003   Error Factor   :  2.219E+000

 -----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures    :       3          Number of Components  : ------
    Hours Per Component   : ------------     Demand Per Component  : --------
    Total Component Hours: ------------      Total Component Demand:      1155

    Probability/Rate    :  1.850E-003        Type         : MEAN
    Variance            :  1.390E-006        Units        : F/D
    Standard Deviation : ------E----         Distribution : DISCRETE

                          ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----                -- %
    Tolerance Bounds    : ------E----      ------E----                -- %
          Error Factor : ------E----          Sided                   -- %

 --------------------------------------------------------------------------------
  Component           1: Unknown External Environment
  Applications        2:
                      3:
 --------------------------------------------------------------------------------
                  Origin                        Record Type
  Failure Data :   PLNT        LERS-CRLB-PMLG-PMTR-DEVR-    -    -    -    -
  Exposure Data:   PLNT        TSTR-    -    -    -    -    -    -    -    -    -

  Data Collection Period:  73 through 79 (YY through YY)

  Include Circuit? : U          Originating Facilities : ZIS1-ZIS2-    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I   Systems : BK-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U     Subsys. train :

 ------------------------------ REFERENCE INFORMATION ---------------------------
     Document Number : 21381        Detail Reference : 1.5-76

 ------------------------------- ADDITIONAL COMMENTS ----------------------------

 --------------------------------------------------------------------------------
```

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Fan Cooler Units
        Design: Fan Cooler Units
  Normal State: Normally Alternating
  Failure Mode: Fails to Run                          Data Record Number:  1

-------------------------NUCLARR-CALCULATED-RATES-------------------------
   Median:  1.548E-006   Upper Tolerance:  1.233E-005   Aggregation Type: 1
   Mean   : +0.000E+000  Error Factor   :  7.964E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
   Number of Failures    :      0        Number of Components   : ------
   Hours Per Component   : ------------  Demand Per Component   : --------
   Total Component Hours:         152000  Total Component Demand: --------

   Probability/Rate    :  3.530E-006     Type          : MEAN
   Variance            :  1.330E-011     Units         : F/H
   Standard Deviation : ------E----      Distribution : DISCRETE

                         ----Lower----   ----Upper----   -Confidence/Coverage-
   Confidence Bounds   : ------E----     ------E----              -- %
   Tolerance Bounds    : ------E----     ------E----              -- %
         Error Factor : ------E----        Sided                  -- %
------------------------------------------------------------------------------
  Component            1: Unknown External Environment
  Applications         2:
                       3:
------------------------------------------------------------------------------
                     Origin                      Record Type
  Failure Data :     PLNT      LERS-CRLB-PMLG-PMTR-DEVR-    -    -    -    -
  Exposure Data:     PLNT      MOPR-TSTR-    -    -    -    -    -    -    -

  Data Collection Period:  73 through 79 (YY through YY)

  Include Circuit? : U           Originating Facilities : ZIS1-ZIS2-    -
  Nuclear Origin?  : Y           Failure Degree     :
  Bayesian Update? : Y           Failure Severity : C
  IRADAP Suitable? : Y           Include System?   : I   Systems : BK-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U      Subsys. train :
------------------------------- REFERENCE INFORMATION ------------------------
    Document Number : 21381          Detail Reference : 1.5-74
-------------------------------- ADDITIONAL COMMENTS -------------------------

------------------------------------------------------------------------------
```

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Fan Cooler Units
        Design: Fan Cooler Units
  Normal State: Normally Alternating
  Failure Mode: Fails to Run                            Data Record Number:   2

 ---------------------------NUCLARR-CALCULATED-RATES-----------------------------
    Median:  2.940E-005   Upper Tolerance:  7.462E-005   Aggregation Type: 1
    Mean  :  2.703E-005   Error Factor   :  2.532E+000

 ------------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures   :      2          Number of Components   : ------
    Hours Per Component  : ------------    Demand Per Component   : --------
    Total Component Hours:         74000   Total Component Demand: --------

    Probability/Rate    :  4.080E-005      Type          : MEAN
    Variance            :  3.600E-010      Units         : F/H
    Standard Deviation : ------E----       Distribution : DISCRETE

                         ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds  : ------E----     ------E----                -- %
    Tolerance Bounds   : ------E----     ------E----                -- %
          Error Factor : ------E----        Sided                   -- %
 --------------------------------------------------------------------------------
  Component          1: Unknown External Environment
  Applications       2:
                     3:
 --------------------------------------------------------------------------------
                 Origin                    Record Type
  Failure Data :  PLNT     LERS-CRLB-PMLG-PMTR-SOCR-   -    -    -    -
  Exposure Data:  PLNT     MOPR-TSTR-   -    -    -    -    -    -    -

  Data Collection Period:  73 through 79 (YY through YY)

  Include Circuit? : U        Originating Facilities : IPS2-    -    -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : Y        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I   Systems : BK-  -  -  -
  Safety Grade?    : N
  Primary Failure? : Y    Subsys. train :
 ---------------------------- REFERENCE INFORMATION -----------------------------
     Document Number : 20982       Detail Reference : 1.5-61
 ----------------------------- ADDITIONAL COMMENTS ------------------------------


 --------------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

    Component: Fan Cooler Units
       Design: Fan Cooler Units
Normal State: Normally Alternating
Failure Mode: Fails to Start                          Data Record Number:    1

-------------------------NUCLARR-CALCULATED-RATES------------------------------
   Median:  1.884E-003   Upper Tolerance:  4.795E-003   Aggregation Type: 1
   Mean  :  1.732E-003   Error Factor   :  2.545E+000

--------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------------
   Number of Failures   :       2          Number of Components   : ------
   Hours Per Component  : ------------     Demand Per Component   : --------
   Total Component Hours: ------------     Total Component Demand:     1155

   Probability/Rate   :  1.170E-003        Type         : MEAN
   Variance           :  7.600E-007        Units        : F/D
   Standard Deviation : ------E----        Distribution : DISCRETE

                        ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds  : ------E----      ------E----              -- %
   Tolerance Bounds   : ------E----      ------E----              -- %
         Error Factor : ------E----          Sided                -- %
--------------------------------------------------------------------------------
Component          1: Unknown External Environment
Applications       2:
                   3:
--------------------------------------------------------------------------------
              Origin                         Record Type
Failure Data :  PLNT       LERS-CRLB-PNLG-PNTR-DEVR-   -    -    -    -
Exposure Data:  PLNT       TSTR-   -    -    -    -    -    -    -    -

Data Collection Period:  73 through 79 (YY through YY)

Include Circuit? : U           Originating Facilities : ZIS1-ZIS2-    -
Nuclear Origin?  : Y           Failure Degree    :
Bayesian Update? : Y           Failure Severity : C
IRADAP Suitable? : Y           Include System?   : I  Systems : BK-  -  -  -
Safety Grade?    : N
Primary Failure? : U     Subsys. train :
------------------------------ REFERENCE INFORMATION ---------------------------
   Document Number : 21381       Detail Reference : 1.5-74
------------------------------- ADDITIONAL COMMENTS ----------------------------


--------------------------------------------------------------------------------
```

```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Fan Cooler Units
         Design: Fan Cooler Units
   Normal State: Normally Alternating
   Failure Mode: Fails to Start                          Data Record Number:   2

-------------------------NUCLARR-CALCULATED-RATES-----------------------------
    Median:  6.443E-003   Upper Tolerance:  5.303E-002   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  8.230E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures    :      0         Number of Components   : ------
    Hours Per Component   : ------------   Demand Per Component   : --------
    Total Component Hours: ------------    Total Component Demand:       35

    Probability/Rate    :  7.260E-004      Type         : MEAN
    Variance            :  1.820E-006      Units        : F/D
    Standard Deviation : ------E----       Distribution : DISCRETE

                         ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----                -- %
    Tolerance Bounds    : ------E----      ------E----                -- %
          Error Factor : ------E----         Sided                    -- %
------------------------------------------------------------------------------
   Component              1: Unknown External Environment
   Applications           2:
                          3:
------------------------------------------------------------------------------
                    Origin                    Record Type
   Failure Data :    PLNT     LERS-CRLB-PMLG-PMTR-SOCR-   -    -    -    -
   Exposure Data:    PLNT     TSTR-  -   -   -   -   -    -    -    -    -

   Data Collection Period:  73 through 79 (YY through YY)

   Include Circuit? : U         Originating Facilities : IPS2-    -    -
   Nuclear Origin?  : Y         Failure Degree    :
   Bayesian Update? : Y         Failure Severity : C
   IRADAP Suitable? : Y         Include System?  : I   Systems : BK-  -  -  -
   Safety Grade?    : N
   Primary Failure? : Y      Subsys. train :

-------------------------- REFERENCE INFORMATION ----------------------------
     Document Number : 20982        Detail Reference : 1.5-61

--------------------------- ADDITIONAL COMMENTS -----------------------------

------------------------------------------------------------------------------
```

```
              MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Fans, Ventilators
      Design: Fans
Normal State: Normally Alternating
Failure Mode: Fails to Run                            Data Record Number:   1

--------------------------NUCLARR-CALCULATED-RATES--------------------------
  Median:  8.952E-007  Upper Tolerance:  7.129E-006  Aggregation Type: 1
  Mean  : +0.000E+000  Error Factor   :  7.964E+000

---------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
  Number of Failures   :      0        Number of Components  : ------
  Hours Per Component  : ------------  Demand Per Component  : --------
  Total Component Hours:       262800  Total Component Demand: --------

  Probability/Rate   :  6.090E-007     Type         : MEAN
  Variance           :  2.260E-012     Units        : F/H
  Standard Deviation : ------E----     Distribution : GAMMA

                       ---Lower---    ---Upper---   -Confidence/Coverage-
  Confidence Bounds  : ------E----    3.810E-006         63 %
  Tolerance Bounds   : ------E----    ------E----        -- %
       Error Factor  : ------E----       Sided           -- %
----------------------------------------------------------------------------
Component         1: Unknown External Environment
Applications      2:
                  3:
----------------------------------------------------------------------------
             Origin                  Record Type
Failure Data :  PLNT     UTDB-LERS-INCD-NOPR-   -   -   -   -   -   -
Exposure Data:  PLNT     SSLB-SURV-JOBO-   -   -   -   -   -   -   -

Data Collection Period:  74 through 83 (YY through YY)

Include Circuit? : U        Originating Facilities : HNP1-   -   -
Nuclear Origin?  : Y        Failura Degree   :
Bayesian Update? : Y        Failure Severity : C
IRADAP Suitable? : Y        Include System?  : I  Systems : BK-  -  -  -
Safety Grade?    : N
Primary Failure? : U    Subsys. train :

--------------------------- REFERENCE INFORMATION --------------------------
  Document Number : 20585       Detail Reference : 4.1-5,12

---------------------------- ADDITIONAL COMMENTS ---------------------------


----------------------------------------------------------------------------
```

```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Fans, Ventilators
        Design: Fans
  Normal State: Normally Alternating
  Failure Mode: Fails to Start                      Data Record Number:   1

 ---------------------------NUCLARR-CALCULATED-RATES-------------------------
    Median:  4.557E-003   Upper Tolerance:  5.684E-003   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  1.247E+000

 -----------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------
    Number of Failures   :      0         Number of Components   : ------
    Hours Per Component  : ------------   Demand Per Component   : --------
    Total Component Hours: ------------   Total Component Demand:      337

    Probability/Rate   :  3.500E-004      Type         : MEAN
    Variance           :  6.890E-008      Units        : F/D
    Standard Deviation : ------E----      Distribution : BETA

                          ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds  : ------E----       2.970E-003              63 %
     Tolerance Bounds  : ------E----      ------E----              -- %
          Error Factor : ------E----         Sided                 -- %

 ----------------------------------------------------------------------------
  Component          1: Unknown External Environment
  Applications       2:
                     3:
 ----------------------------------------------------------------------------
                   Origin                     Record Type
  Failure Data :   PLNT      UTDB-LERS-INCD-MOPR-    -    -    -    -    -
  Exposure Data:   PLNT      SSLB-SURV-JOBO-PMWR-    -    -    -    -    -

  Data Collection Period:  74 through 83 (YY through YY)

  Include Circuit? : U        Originating Facilities : HNP1-    -    -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : Y        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I  Systems : BK-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U    Subsys. train :

 ---------------------------- REFERENCE INFORMATION -------------------------
    Document Number : 20585      Detail Reference : 4.1-5,12
 ---------------------------- ADDITIONAL COMMENTS ---------------------------

 ----------------------------------------------------------------------------
```

```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Heat Exchangers
        Design: Unknown
  Normal State: Normally Open
  Failure Mode: Plugged                                 Data Record Number:   1

 ----------------------------NUCLARR-CALCULATED-RATES----------------------------
    Median:  2.817E-006   Upper Tolerance:  2.244E-005   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  7.964E+000

 ------------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures    :       0       Number of Components   : ------
    Hours Per Component   : ------------  Demand Per Component   : --------
    Total Component Hours:         83500  Total Component Demand: --------

    Probability/Rate    : ------E----     Type          :
    Variance            : ------E----     Units         : F/H
    Standard Deviation  : ------E----     Distribution  : OTHER

                          ---Lower---      ---Upper---    -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----              -- %
    Tolerance Bounds    : ------E----      ------E----              -- %
          Error Factor  : ------E----         Sided                 -- %

 --------------------------------------------------------------------------------
  Component            1: Unknown Internal Environment
  Applications         2:
                       3:
 --------------------------------------------------------------------------------
                   Origin                      Record Type
  Failure Data :    PLNT      LERS-CRLB-PMLG-PMTR-DEVR-    -    -    -    -
  Exposure Data:    PLNT      MOPR-TSTR-   -    -    -    -    -    -    -

  Data Collection Period:  73 through 79 (YY through YY)

  Include Circuit? : U         Originating Facilities : ZIS1-ZIS2-    -
  Nuclear Origin?  : Y         Failure Degree    :
  Bayesian Update? : N         Failure Severity  : C
  IRADAP Suitable? : Y         Include System?   : I  Systems : AL-  -  -  -
  Safety Grade?    : U
  Primary Failure? : U     Subsys. train :
 ------------------------------ REFERENCE INFORMATION ---------------------------
    Document Number : 21381       Detail Reference : 1.5-74
 ------------------------------- ADDITIONAL COMMENTS ----------------------------


 --------------------------------------------------------------------------------
```

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

    Component: Heat Exchangers
       Design: Unknown
 Normal State: Normally Open
 Failure Mode: Plugged                              Data Record Number:   2

------------------------------NUCLARR-CALCULATED-RATES------------------------------
   Median:  2.817E-006   Upper Tolerance:  2.244E-005   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor    :  7.964E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
   Number of Failures    :       0       Number of Components    : ------
   Hours Per Component   : ------------  Demand Per Component    : --------
   Total Component Hours:        83500   Total Component Demand: --------

   Probability/Rate    : ------E----     Type         :
   Variance            : ------E----     Units        : F/H
   Standard Deviation  : ------E----     Distribution : OTHER

                         ---Lower---      ---Upper---    -Confidence/Coverage-
   Confidence Bounds   : ------E----      ------E----              -- %
   Tolerance Bounds    : ------E----      ------E----              -- %
        Error Factor   : ------E----         Sided                 -- %
------------------------------------------------------------------------------------
 Component           1: Unknown Internal Environment
 Applications        2:
                     3:
------------------------------------------------------------------------------------
                 Origin                      Record Type
 Failure Data :   PLNT      LERS-CRLB-PMLG-PMTR-DEVR-   -    -    -    -
 Exposure Data:   PLNT      MOPR-TSTR-   -    -    -    -    -    -    -

 Data Collection Period:  73 through 79 (YY through YY)

 Include Circuit? : U        Originating Facilities : ZIS1-ZIS2-    -
 Nuclear Origin?  : Y        Failure Degree    :
 Bayesian Update? : N        Failure Severity : C
 IRADAP Suitable? : Y        Include System?  : I  Systems : AL-  -  -  -
 Safety Grade?    : U
 Primary Failure? : U     Subsys. train :
------------------------------- REFERENCE INFORMATION -------------------------------
   Document Number : 21381        Detail Reference : 1.5-74
-------------------------------- ADDITIONAL COMMENTS --------------------------------

------------------------------------------------------------------------------------
```

```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Heat Exchangers
        Design: Unknown
  Normal State: Normally Open
  Failure Mode: Plugged                                 Data Record Number:   3

 ---------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  3.179E-006   Upper Tolerance:  2.532E-005   Aggregation Type: 1
    Mean   : +0.000E+000   Error Factor   :  7.964E+000

 ----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures    :      0        Number of Components   : ------
    Hours Per Component   : ------------  Demand Per Component   : --------
    Total Component Hours:         74000  Total Component Demand: --------

    Probability/Rate    : ------E----     Type         :
    Variance            : ------E----     Units        :
    Standard Deviation  : ------E----     Distribution : DISCRETE

                          ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----               -- %
    Tolerance Bounds    : ------E----      ------E----               -- %
          Error Factor  : ------E----        Sided                   -- %

 ------------------------------------------------------------------------------
  Component            1: Unknown Internal Environment
  Applications         2:
                       3:
 ------------------------------------------------------------------------------
                  Origin                       Record Type
  Failure Data :   PLNT      LERS-CRLB-PMLG-PMTR-SOCR-   -    -    -    -
  Exposure Data:   PLNT      MOPR-TSTR-    -    -    -    -    -    -    -

  Data Collection Period:  73 through 79 (YY through YY)

  Include Circuit? : U          Originating Facilities : IPS2-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?   : I   Systems : AL-  -  -  -
  Safety Grade?    : N
  Primary Failure? : Y     Subsys. train :

 ---------------------------- REFERENCE INFORMATION ---------------------------
    Document Number : 20982       Detail Reference : 1.5-61

 ----------------------------- ADDITIONAL COMMENTS ----------------------------


 ------------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Heat Exchangers
        Design: Unknown
  Normal State: Normally Open
  Failure Mode: Plugged                               Data Record Number:    4

 ------------------------------NUCLARR-CALCULATED-RATES------------------------------
    Median:  3.179E-006   Upper Tolerance:  2.532E-005   Aggregation Type: 1
    Mean   : +0.000E+000  Error Factor    :  7.964E+000

 -----------------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
    Number of Failures   :       0        Number of Components   : ------
    Hours Per Component  : ------------   Demand Per Component   : --------
    Total Component Hours:          74000 Total Component Demand: --------

    Probability/Rate    : ------E----     Type          :
    Variance            : ------E----     Units         :
    Standard Deviation  : ------E----     Distribution  : DISCRETE

                          ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----     ------E----              -- %
    Tolerance Bounds    : ------E----     ------E----              -- %
          Error Factor  : ------E----         Sided                -- %

 ------------------------------------------------------------------------------------
  Component          1: Unknown Internal Environment
  Applications       2:
                     3:
 ------------------------------------------------------------------------------------
                Origin                      Record Type
  Failure Data :  PLNT      LERS-CRLB-PMLG-PMTR-SOCR-    -    -    -    -
  Exposure Data:  PLNT      MOPR-TSTR-    -    -    -    -    -    -    -

  Data Collection Period:  73 through 79 (YY through YY)

  Include Circuit? : U          Originating Facilities : IPS2-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : AL-  -  -  -
  Safety Grade?    : N
  Primary Failure? : Y     Subsys. train :
 ------------------------------- REFERENCE INFORMATION -------------------------------
    Document Number : 20982       Detail Reference : 1.5-61
 -------------------------------- ADDITIONAL COMMENTS --------------------------------


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```

```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Heat Exchangers
        Design: Unknown
  Normal State: Normally Running
  Failure Mode: Leakage                                Data Record Number:   1

-------------------------------NUCLARR-CALCULATED-RATES-------------------------------
    Median:  9.968E-007   Upper Tolerance:  7.938E-006   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  7.964E+000

----------------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
    Number of Failures   :      0        Number of Components   : ------
    Hours Per Component  : ------------  Demand Per Component   : --------
    Total Component Hours:        236000 Total Component Demand: --------

    Probability/Rate   :  7.130E-007     Type         : MEAN
    Variance           :  1.130E-012     Units        : F/H
    Standard Deviation : ------E----     Distribution : DISCRETE

                        ---Lower---     ---Upper---    -Confidence/Coverage-
    Confidence Bounds  : ------E----     ------E----                 -- %
    Tolerance Bounds   : ------E----     ------E----                 -- %
          Error Factor : ------E----        Sided                    -- %

--------------------------------------------------------------------------------------
  Component          1: Unknown Internal Environment
  Applications       2:
                     3:
--------------------------------------------------------------------------------------
                   Origin                      Record Type
  Failure Data :    PLNT      LERS-CRLB-PMLG-PMTR-DEVR-    -    -    -    -
  Exposure Data:    PLNT      MOPR-TSTR-    -    -    -    -    -    -    -

  Data Collection Period:  73 through 79 (YY through YY)

  Include Circuit? : U           Originating Facilities : ZIS1-ZIS2-    -
  Nuclear Origin?  : Y           Failure Degree    :
  Bayesian Update? : Y           Failure Severity  : C
  IRADAP Suitable? : Y           Include System?   : I  Systems : AL-  -  -  -
  Safety Grade?    : U
  Primary Failure? : U     Subsys. train :

---------------------------------- REFERENCE INFORMATION ------------------------------
    Document Number : 21381        Detail Reference : 1.5-74

----------------------------------- ADDITIONAL COMMENTS -------------------------------


--------------------------------------------------------------------------------------
```

```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Heat Exchangers
        Design: Unknown
  Normal State: Normally Running
  Failure Mode: Leakage                                  Data Record Number:   2

 ----------------------------NUCLARR-CALCULATED-RATES-----------------------------
    Median:  1.590E-006   Upper Tolerance:  1.266E-005   Aggregation Type: 1
    Mean   : +0.000E+000  Error Factor    :  7.964E+000

 --------------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
    Number of Failures    :       0          Number of Components   : ------
    Hours Per Component   : ------------     Demand Per Component   : --------
    Total Component Hours:       148000      Total Component Demand: --------

    Probability/Rate    :  8.420E-007        Type         : MEAN
    Variance            :  1.940E-012        Units        : F/H
    Standard Deviation : ------E----         Distribution : DISCRETE

                           ----Lower----   ----Upper----  -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----             -- %
    Tolerance Bounds    : ------E----      ------E----             -- %
          Error Factor : ------E----          Sided                -- %
 ---------------------------------------------------------------------------------
  Component           1: Unknown Internal Environment
  Applications        2:
                      3:
 ---------------------------------------------------------------------------------
                 Origin                      Record Type
  Failure Data :  PLNT     LERS-CRLB-PMLG-PNTR-SOCR-    -    -    -    -
  Exposure Data:  PLNT     MOPR-TSTR-    -    -    -    -    -    -    -

  Data Collection Period:  73 through 79 (YY through YY)

  Include Circuit? : U        Originating Facilities : IPS2-    -    -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : Y        Failure Severity : C
  IRADAP Suitable? : Y        Include System?   : I   Systems : AL-  -  -  -
  Safety Grade?    : N
  Primary Failure? : Y     Subsys. train :

 ---------------------------- REFERENCE INFORMATION ------------------------------
    Document Number : 20982        Detail Reference : 1.5-61
 ---------------------------- ADDITIONAL COMMENTS --------------------------------


 ---------------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Pumps, Diesel Driven
         Design: Unknown
   Normal State: Normally Standby
   Failure Mode: Fails to Run                          Data Record Number:   1

 --------------------------NUCLARR-CALCULATED-RATES-----------------------------
    Median:  6.610E-002  Upper Tolerance:  1.673E-001   Aggregation Type: 1
    Mean  :  6.061E-002  Error Factor   :  2.532E+000

 ------------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
    Number of Failures   :      2          Number of Components   : ------
    Hours Per Component  : ------------    Demand Per Component   : --------
    Total Component Hours:            33   Total Component Demand: --------

    Probability/Rate   :  2.910E-002       Type         : MEAN
    Variance           :  5.530E-004       Units        : F/H
    Standard Deviation : ------E----       Distribution : DISCRETE

                         ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds  : ------E----      ------E----               -- %
    Tolerance Bounds   : ------E----      ------E----               -- %
         Error Factor  : ------E----         Sided                  -- %
 -------------------------------------------------------------------------------
   Component          1: Water, Borated Internal Environment
   Applications       2:
                      3:
 -------------------------------------------------------------------------------
                   Origin                      Record Type
   Failure Data :   PLNT      LERS-CRLB-PNLG-PNTR-DEVR-   -    -    -    -
   Exposure Data:   PLNT      NOPR-TSTR-  -    -    -    -    -    -    -    -

   Data Collection Period:  73 through 79 (YY through YY)

   Include Circuit? : U        Originating Facilities : ZIS1-ZIS2-    -
   Nuclear Origin?  : Y        Failure Degree    :
   Bayesian Update? : Y        Failure Severity : C
   IRADAP Suitable? : Y        Include System?   : I  Systems : BE-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : U    Subsys. train :
 ----------------------------- REFERENCE INFORMATION ---------------------------
     Document Number : 21381       Detail Reference : 1.5-76
 ------------------------------ ADDITIONAL COMMENTS ----------------------------

 -------------------------------------------------------------------------------
```

```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Pumps, Diesel Driven
         Design: Unknown
   Normal State: Normally Standby
   Failure Mode: Fails to Start                         Data Record Number:   1

 ---------------------------NUCLARR-CALCULATED-RATES----------------------------
    Median:  3.625E-003  Upper Tolerance:  1.450E-002   Aggregation Type: 1
    Mean  :  3.067E-003  Error Factor   :  4.000E+000

 -----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures    :      1          Number of Components  : ------
    Hours Per Component   : ------------    Demand Per Component  : --------
    Total Component Hours: ------------     Total Component Demand:      326

    Probability/Rate    :  3.060E-003       Type         : MEAN
    Variance            : ------E----       Units        : F/D
    Standard Deviation  : ------E----       Distribution : POISSON

                          ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds   :  1.570E-004       1.450E-002              90 %
    Tolerance Bounds    : ------E----      ------E----              -- %
          Error Factor  : ------E----         Sided                 -- %

 -------------------------------------------------------------------------------
   Component          1: Unknown Internal Environment
   Applications       2:
                      3:
 -------------------------------------------------------------------------------
                  Origin                     Record Type
   Failure Data :  PLNT       PMLG-CRLB-SURV-LERS-DEVR-OTHR-    -    -    -
   Exposure Data:  PLNT       CRLB-SURV-   -    -    -    -    -    -    -

   Data Collection Period:  70 through 79 (YY through YY)

   Include Circuit? : U          Originating Facilities : BRP1-    -    -
   Nuclear Origin?  : Y          Failure Degree    :
   Bayesian Update? : N          Failure Severity : C
   IRADAP Suitable? : Y          Include System?  : I  Systems : KP-  -  -  -
   Safety Grade?    : N
   Primary Failure? : U     Subsys. train :

 ---------------------------- REFERENCE INFORMATION ----------------------------
     Document Number : 20081       Detail Reference : III-10

 ----------------------------- ADDITIONAL COMMENTS -----------------------------
   FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP.

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```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Pumps, Diesel Driven
      Design: Unknown
Normal State: Normally Standby
Failure Mode: Fails to Start                           Data Record Number:   2

-----------------------------NUCLARR-CALCULATED-RATES---------------------------
  Median:  6.453E-003  Upper Tolerance:  2.116E-002  Aggregation Type: 1
  Mean  :  5.464E-003  Error Factor   :  3.279E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
  Number of Failures   :      1        Number of Components  : ------
  Hours Per Component  : ------------  Demand Per Component  : --------
  Total Component Hours: ------------  Total Component Demand:      183

  Probability/Rate   :  4.230E-003     Type         : MEAN
  Variance           :  1.310E-005     Units        : F/D
  Standard Deviation : ------E----     Distribution : DISCRETE

                       ---Lower---   ---Upper---   -Confidence/Coverage-
  Confidence Bounds  : ------E----   ------E----              -- %
  Tolerance Bounds   : ------E----   ------E----              -- %
       Error Factor  : ------E----      Sided                 -- %

--------------------------------------------------------------------------------
Component        1: Water, Borated Internal Environment
Applications     2:
                 3:
--------------------------------------------------------------------------------
                 Origin                   Record Type
Failure Data :    PLNT      LERS-CRLB-PMLG-PMTR-DEVR-   -    -    -    -
Exposure Data:    PLNT      TSTR-   -    -    -    -    -    -    -    -

Data Collection Period:  73 through 79 (YY through YY)

Include Circuit? : U        Originating Facilities : ZIS1-ZIS2-    -
Nuclear Origin?  : Y        Failure Degree     :
Bayesian Update? : Y        Failure Severity : C
IRADAP Suitable? : Y        Include System?  : I  Systems : BE-  -  -  -
Safety Grade?    : Y
Primary Failure? : U     Subsys. train :

------------------------------- REFERENCE INFORMATION --------------------------
   Document Number : 21381       Detail Reference : 1.5-76

------------------------------- ADDITIONAL COMMENTS ----------------------------


--------------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Diesel Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Start                         Data Record Number:   3

-----------------------NUCLARR-CALCULATED-RATES-----------------------------
   Median:  5.160E-002  Upper Tolerance:  8.730E-002  Aggregation Type: 1
   Mean  :  5.063E-002  Error Factor   :  1.692E+000

-------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
   Number of Failures    :      8        Number of Components  : ------
   Hours Per Component   : ------------  Demand Per Component  : --------
   Total Component Hours: ------------   Total Component Demand:      158

   Probability/Rate   :  4.770E-002      Type         : MEAN
   Variance           :  2.230E-004      Units        : F/D
   Standard Deviation : ------E----      Distribution : BETA

                        ---Lower---    ---Upper---    -Confidence/Coverage-
   Confidence Bounds  : ------E----     8.730E-002            95 %
   Tolerance Bounds   : ------E----    ------E----            -- %
         Error Factor : ------E----       Sided               -- %

----------------------------------------------------------------------------
  Component          1: Unknown Internal Environment
  Applications       2:
                     3:
----------------------------------------------------------------------------
                  Origin                   Record Type
  Failure Data :   PLNT     UTDB-LERS-PMLG-SSLB-   -   -   -   -   -
  Exposure Data:   PLNT     DCCN-PMTR-RHLG-   -   -   -   -   -   -

  Data Collection Period:  71 through 84 (YY through YY)

  Include Circuit? : U         Originating Facilities : MNS1-    -    -
  Nuclear Origin?  : Y         Failure Degree    :
  Bayesian Update? : Y         Failure Severity : C
  IRADAP Suitable? : Y         Include System?  : I  Systems : KP-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U     Subsys. train :
------------------------------ REFERENCE INFORMATION -----------------------
   Document Number : 21185       Detail Reference : 3.1-6,13
-------------------------------- ADDITIONAL COMMENTS -----------------------


----------------------------------------------------------------------------
```

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Diesel Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Start                        Data Record Number:   4

 ------------------------------NUCLARR-CALCULATED-RATES-----------------------------
   Median:  2.754E-003  Upper Tolerance:  7.000E-003   Aggregation Type: 1
   Mean  :  2.532E-003  Error Factor    :  2.542E+000

 -------------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
   Number of Failures    :       2         Number of Components   : ------
   Hours Per Component   : ------------    Demand Per Component   : --------
   Total Component Hours: ------------     Total Component Demand:      790

   Probability/Rate   :  3.120E-003        Type         : MEAN
   Variance           :  3.730E-006        Units        : F/D
   Standard Deviation : ------E----        Distribution : BETA

                       ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds  : ------E----     ------E----                -- %
   Tolerance Bounds   : ------E----     ------E----                -- %
         Error Factor : ------E----        Sided                   -- %
 -----------------------------------------------------------------------------------
  Component          1: Unknown Internal Environment
  Applications       2:
                     3:
 -----------------------------------------------------------------------------------
                  Origin                    Record Type
  Failure Data :   PLNT       UTDB-LERS-INCD-MOPR-   -    -    -    -    -
  Exposure Data:   PLNT       SSLB-SURV-JOBO-PMMR-   -    -    -    -    -

  Data Collection Period:  74 through 83 (YY through YY)

  Include Circuit? : U        Originating Facilities : HNP1-    -    -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : Y        Failure Severity : C
  IRADAP Suitable? : Y        Include System?   : I  Systems : KP-   -   -
  Safety Grade?    : N
  Primary Failure? : U    Subsys. train :
 ------------------------------ REFERENCE INFORMATION ------------------------------
   Document Number : 20585      Detail Reference : 4.1-5,11
 ------------------------------- ADDITIONAL COMMENTS -------------------------------


 -----------------------------------------------------------------------------------
```

1094

```
         MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Pumps, Motor Driven
         Design: Centrifugal
   Normal State: Normally Running
   Failure Mode: Fails to Operate                    Data Record Number:   1

-------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  4.545E-005   Upper Tolerance:  1.151E-004   Aggregation Type: 1
    Mean  :  4.167E-005   Error Factor   :  2.532E+000

---------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
    Number of Failures   :      2        Number of Components  : ------
    Hours Per Component  : ------------  Demand Per Component  : --------
    Total Componont Hours:        47991  Total Component Demand: --------

    Probability/Rate   :  2.700E-005     Type         : MEDIAN
    Variance           :  4.400E-010     Units        : F/H
    Standard Deviation : ------E----     Distribution : DISCRETE

                         ---Lower---     ---Upper---   -Confidence/Coverage-
    Confidence Bounds  : ------E----     ------E----              -- %
    Tolerance Bounds   :  4.100E-006      5.600E-005              90 %
          Error Factor : ------E----        Sided                 -- %

----------------------------------------------------------------------------
   Component         1: Water, High Purity/Demineralized - Int.
   Applications      2:
                     3:
----------------------------------------------------------------------------
                   Origin                      Record Type
   Failure Data :   PLNT        PMWR-LERS-INCD-   -   -   -   -   -   -
   Exposure Data:   PLNT        TSTR-PMTR-CRLB-   -   -   -   -   -   -

   Data Collection Period:  75 through 80 (YY through YY)

   Include Circuit? : U         Originating Facilities : NEE3-    -    -
   Nuclear Origin?  : Y         Failure Degree    :
   Bayesian Update? : Y         Failure Severity  : C
   IRADAP Suitable? : Y         Include System?   : I   Systems : CC-  -  -  -
   Safety Grade?    : N
   Primary Failure? : U     Subsys. train :

--------------------------- REFERENCE INFORMATION --------------------------
     Document Number : 21281       Detail Reference : 5-22

---------------------------- ADDITIONAL COMMENTS ---------------------------
   MEAN = 2.80E-05/H

----------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Pumps, Motor Driven
         Design: Centrifugal
   Normal State: Normally Standby
   Failure Mode: Fails to Run                         Data Record Number:   1

---------------------------NUCLARR-CALCULATED-RATES----------------------------
    Median:  6.065E-006   Upper Tolerance:  4.830E-005   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor    :  7.964E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
    Number of Failures   :        0        Number of Components  : ------
    Hours Per Component  : ------------    Demand Per Component  : --------
    Total Component Hours:        38787    Total Component Demand: --------

    Probability/Rate    :  3.500E-006      Type         : MEDIAN
    Variance            :  8.600E-011      Units        : F/H
    Standard Deviation  : ------E----      Distribution : DISCRETE

                           ---Lower---     ---Upper---   -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----            -- %
    Tolerance Bounds    :  4.400E-007       2.000E-005            90 %
          Error Factor  : ------E----        Sided                -- %
-------------------------------------------------------------------------------
   Component          1: Water, Borated Internal Environment
   Applications       2:
                      3:
-------------------------------------------------------------------------------
                 Origin                       Record Type
   Failure Data :  PLNT     PMWR-LERS-INCD-    -    -    -    -    -    -
   Exposure Data:  PLNT     TSTR-PMTR-CRLB-    -    -    -    -    -    -

   Data Collection Period:  75 through 80 (YY through YY)

   Include Circuit? : U        Originating Facilities : NEE3-    -    -
   Nuclear Origin?  : Y        Failure Degree    :
   Bayesian Update? : Y        Failure Severity  : C
   IRADAP Suitable? : Y        Include System?   : I   Systems : BQ-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : U     Subsys. train :

---------------------------- REFERENCE INFORMATION ----------------------------
     Document Number : 21281      Detail Reference : 5-21
----------------------------- ADDITIONAL COMMENTS -----------------------------
   MEAN = 8.40E-06/H
-------------------------------------------------------------------------------
```

```
         MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Pumps, Motor Driven
      Design: Centrifugal
Normal State: Normally Standby
Failure Mode: Fails to Run                       Data Record Number:   2

----------------------------NUCLARR-CALCULATED-RATES----------------------------
  Median:  1.055E-004  Upper Tolerance:  3.444E-004   Aggregation Type: 1
  Mean  :  8.860E-005  Error Factor    :  3.265E+000

------------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
  Number of Failures    :      1        Number of Components   : ------
  Hours Per Component   : ------------  Demand Per Component   : --------
  Total Component Hours:         11287  Total Component Demand: --------

  Probability/Rate    :  1.600E-005     Type          : MEDIAN
  Variance            :  1.600E-009     Units         : F/H
  Standard Deviation : ------E----      Distribution : DISCRETE

                        ----Lower----   ----Upper----   -Confidence/Coverage-
  Confidence Bounds  : ------E----      ------E----              -- %
  Tolerance Bounds   :  1.500E-006       9.500E-005              90 %
        Error Factor : ------E----         Sided                 -- %

--------------------------------------------------------------------------------
Component         1: Water, Borated Internal Environment
Applications      2:
                  3:
--------------------------------------------------------------------------------
                Origin                        Record Type
Failure Data :   PLNT       PWMR-LERS-INCD-   -    -    -    -    -    -
Exposure Data:   PLNT       TSTR-PMTR-CRLB-   -    -    -    -    -    -

Data Collection Period:  75 through 80 (YY through YY)

Include Circuit? : U          Originating Facilities : NEE3-    -    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : Y          Failure Severity : C
IRADAP Suitable? : Y          Include System?  : I  Systems : BP-  -  -  -
Safety Grade?    : Y
Primary Failure? : U     Subsys. train :

--------------------------- REFERENCE INFORMATION ------------------------------
   Document Number : 21281       Detail Reference : 5-21

---------------------------- ADDITIONAL COMMENTS -------------------------------
MEAN = 3.70E-05/H

--------------------------------------------------------------------------------
```

```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Pumps, Motor Driven
      Design: Centrifugal
Normal State: Normally Standby
Failure Mode: Fails to Run                             Data Record Number:   3

-----------------------------NUCLARR-CALCULATED-RATES-----------------------------
  Median:  5.881E-003   Upper Tolerance:  4.684E-002   Aggregation Type: 1
  Mean  : +0.000E+000   Error Factor   :  7.964E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
  Number of Failures    :      0        Number of Components  : ------
  Hours Per Component   : ------------  Demand Per Component  : --------
  Total Component Hours:             40  Total Component Demand: --------

  Probability/Rate   :  7.000E-006      Type         : MEDIAN
  Variance           :  1.900E-009      Units        : F/H
  Standard Deviation : ------E----      Distribution : DISCRETE

                       ----Lower----    ----Upper----   -Confidence/Coverage-
  Confidence Bounds  : ------E----      ------E----              -- %
  Tolerance Bounds   :  5.900E-007       6.000E-005              90 %
        Error Factor : ------E----         Sided                 -- %

----------------------------------------------------------------------------------
Component           1: Water, Borated Internal Environment
Applications        2:
                    3:
----------------------------------------------------------------------------------
                Origin                          Record Type
Failure Data :   PLNT        PMMR-LERS-INCD-    -    -    -    -    -    -
Exposure Data:   PLNT        TSTR-PMTR-CRLB-    -    -    -    -    -    -

Data Collection Period:  75 through 80 (YY through YY)

Include Circuit? : U          Originating Facilities : NEE3-    -    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : Y          Failure Severity  : C
IRADAP Suitable? : Y          Include System?   : I   Systems : BE-  -  -  -
Safety Grade?    : Y
Primary Failure? : U     Subsys. train :

------------------------------ REFERENCE INFORMATION ------------------------------
  Document Number : 21281        Detail Reference : 5-21

------------------------------- ADDITIONAL COMMENTS -------------------------------
MEAN = 2.00E-05/H
----------------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Pumps, Motor Driven
      Design: Centrifugal
Normal State: Normally Standby
Failure Mode: Fails to Run                          Data Record Number:   4

---------------------------NUCLARR-CALCULATED-RATES--------------------------
  Median:  3.095E-006   Upper Tolerance:  2.465E-005   Aggregation Type: 1
  Mean  : +0.000E+000   Error Factor   :  7.964E+000

------------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------
  Number of Failures   :       0        Number of Components  : ------
  Hours Per Component  : ------------   Demand Per Component  : --------
  Total Component Hours:       76000    Total Component Demand: --------

  Probability/Rate   :  1.760E-006      Type          : MEAN
  Variance           :  9.620E-012      Units         : F/H
  Standard Deviation : ------E----      Distribution  : DISCRETE

                       ----Lower----   ----Upper----   -Confidence/Coverage-
  Confidence Bounds  : ------E----     ------E----               -- %
  Tolerance Bounds   : ------E----     ------E----               -- %
       Error Factor  : ------E----        Sided                  -- %

------------------------------------------------------------------------------
Component          1: Water, Borated Internal Environment
Applications       2:
                   3:
------------------------------------------------------------------------------
               Origin                        Record Type
Failure Data :  PLNT     LERS-CRLB-PMLG-PMTR-DEVR-   -    -    -    -
Exposure Data:  PLNT     MOPR-TSTR-   -    -    -    -    -    -    -    -

Data Collection Period:  73 through 79 (YY through YY)

Include Circuit? : U         Originating Facilities : ZIS1-ZIS2-    -
Nuclear Origin?  : Y         Failure Degree    :
Bayesian Update? : Y         Failure Severity : C
IRADAP Suitable? : Y         Include System?  : I  Systems : CB-  -  -  -
Safety Grade?    : N
Primary Failure? : U    Subsys. train :

-------------------------- REFERENCE INFORMATION ----------------------------
   Document Number : 21381       Detail Reference : 1.5-76
--------------------------- ADDITIONAL COMMENTS -----------------------------


------------------------------------------------------------------------------
```

MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

```
      Component: Pumps, Motor Driven
         Design: Centrifugal
   Normal State: Normally Standby
   Failure Mode: Fails to Start                       Data Record Number:  1

---------------------------NUCLARR-CALCULATED-RATES------------------------------
   Median:  2.231E-003   Upper Tolerance:  7.348E-003   Aggregation Type: 1
   Mean  :  1.887E-003   Error Factor   :  3.294E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------------
   Number of Failures    :      1         Number of Components   : ------
   Hours Per Component   : ------------   Demand Per Component   : --------
   Total Component Hours: ------------    Total Component Demand:      530

   Probability/Rate    :  3.800E-004      Type          : MEDIAN
   Variance            :  8.200E-007      Units         : F/D
   Standard Deviation : ------E----       Distribution : DISCRETE

                          ---Lower---       ---Upper---    -Confidence/Coverage-
   Confidence Bounds  : ------E----       ------E----              -- %
   Tolerance Bounds   :  6.000E-005        2.100E-003              90 %
         Error Factor : ------E----          Sided                 -- %

---------------------------------------------------------------------------------
 Component           1: Water, Borated Internal Environment
 Applications        2:
                     3:
---------------------------------------------------------------------------------
                 Origin                         Record Type
 Failure Data :   PLNT       PMWR-LERS-INCD-    -   -   -   -   -   -
 Exposure Data:   PLNT       TSTR-PMTR-CRLB-    -   -   -   -   -   -

 Data Collection Period:  75 through 80 (YY through YY)

 Include Circuit? : U        Originating Facilities : NEE3-    -    -
 Nuclear Origin?  : Y        Failure Degree    :
 Bayesian Update? : Y        Failure Severity : C
 IRADAP Suitable? : Y        Include System?  : I  Systems : BQ-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : U    Subsys. train :

----------------------------- REFERENCE INFORMATION ------------------------------
   Document Number : 21281       Detail Reference : 5-21

------------------------------ ADDITIONAL COMMENTS -------------------------------
 MEAN = 8.40E-04/D

---------------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Motor Driven
        Design: Centrifugal
  Normal State: Normally Standby
  Failure Mode: Fails to Start                           Data Record Number:  2

 ----------------------------NUCLARR-CALCULATED-RATES--------------------------
    Median:  6.866E-003   Upper Tolerance:  8.568E-003   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  1.248E+000

 -----------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
    Number of Failures   :      0          Number of Components  : ------
    Hours Per Component  : ------------    Demand Per Component  : --------
    Total Component Hours: ------------    Total Component Demand:      223

    Probability/Rate    :  2.500E-004      Type         : MEDIAN
    Variance            :  3.300E-007      Units        : F/D
    Standard Deviation  : ------E----      Distribution : DISCRETE

                           ---Lower---     ---Upper---    -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----              -- %
    Tolerance Bounds    :  1.400E-005      1.000E-003               90 %
          Error Factor  : ------E----        Sided                  -- %

 ------------------------------------------------------------------------------
  Component            1: Water, Borated Internal Environment
  Applications         2:
                       3:
 ------------------------------------------------------------------------------
                 Origin                          Record Type
  Failure Data :  PLNT        PWMR-LERS-INCD-    -   -   -   -   -   -
  Exposure Data:  PLNT        TSTR-PMTR-CRLB-    -   -   -   -   -   -

  Data Collection Period:  75 through 80 (YY through YY)

  Include Circuit? : U         Originating Facilities : NEE3-    -   -
  Nuclear Origin?  : Y         Failure Degree    :
  Bayesian Update? : Y         Failure Severity  : C
  IRADAP Suitable? : Y         Include System?   : I  Systems : BP-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : U     Subsys. train :

 ------------------------------ REFERENCE INFORMATION -------------------------
     Document Number : 21281        Detail Reference : 5-21

 ------------------------------ ADDITIONAL COMMENTS ---------------------------
  MEAN = 3.70E-04/D

 ------------------------------------------------------------------------------
```

```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Motor Driven
        Design: Centrifugal
  Normal State: Normally Standby
  Failure Mode: Fails to Start                          Data Record Number:   3

 ----------------------NUCLARR-CALCULATED-RATES--------------------------------
   Median:  2.261E-002  Upper Tolerance:  4.943E-002   Aggregation Type: 1
   Mean  :  2.143E-002  Error Factor   :  2.186E+000

 ---------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
   Number of Failures   :     3          Number of Components  : ------
   Hours Per Component  : ------------   Demand Per Component  : --------
   Total Component Hours: ------------   Total Component Demand:      140

   Probability/Rate   :  1.600E-005      Type         : MEDIAN
   Variance           :  3.200E-005      Units        : F/D
   Standard Deviation : ------E----      Distribution : DISCRETE

                        ---Lower---     ---Upper---   -Confidence/Coverage-
   Confidence Bounds  : ------E----     ------E----             -- %
   Tolerance Bounds   :  1.100E-003     1.800E 002              90 %
         Error Factor : ------E----        Sided                -- %
 ------------------------------------------------------------------------------
  Component           1: Water, Borated Internal Environment
  Applications        2:
                      3:
 ------------------------------------------------------------------------------
                Origin                     Record Type
  Failure Data :  PLNT      PMWR-LERS-INCD-    -    -    -    -    -    -
  Exposure Data:  PLNT      TSTR-PMTR-CRLB-    -    -    -    -    -    -

  Data Collection Period:  75 through 80 (YY through YY)

  Include Circuit? : U          Originating Facilities : NEE3-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : BE-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : U     Subsys. train :
 ------------------------- REFERENCE INFORMATION ------------------------------
     Document Number : 21281         Detail Reference : 5-21
 ---------------------------- ADDITIONAL COMMENTS -----------------------------
  MEAN = 8.10E-03/D
 ------------------------------------------------------------------------------
```

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Pumps, Motor Driven
      Design: Centrifugal
Normal State: Normally Standby
Failure Mode: Fails to Start                           Data Record Number:   4

─────────────────────────NUCLARR─CALCULATED─RATES─────────────────────────────
  Median:  2.451E-002   Upper Tolerance:  3.088E-002   Aggregation Type: 1
  Mean  : +0.000E+000   Error Factor   :  1.260E+000

──────────────────────REFERENCE─RAW─and─PROBABILITY─DATA──────────────────────
  Number of Failures   :      0          Number of Components   : ------
  Hours Per Component  : ------------    Demand Per Component   : --------
  Total Component Hours: ------------    Total Component Demand:       61

  Probability/Rate    :  2.700E-004      Type         : MEDIAN
  Variance            :  6.800E-007      Units        : F/D
  Standard Deviation : ------E----       Distribution : DISCRETE

                       ───Lower───    ───Upper───   -Confidence/Coverage-
  Confidence Bounds  : ------E----    ------E----              -- %
  Tolerance Bounds   :  1.400E-005     1.300E-003              90 %
        Error Factor : ------E----       Sided                 -- %

──────────────────────────────────────────────────────────────────────────────
Component          1: Water, High Purity/Demineralized - Int.
Applications       2:
                   3:
──────────────────────────────────────────────────────────────────────────────
                 Origin                          Record Type
Failure Data :   PLNT      PMWR-LERS-INCD-    -    -    -    -    -    -
Exposure Data:   PLNT      TSTR-PMTR-CRLB-    -    -    -    -    -    -

Data Collection Period:  75 through 80 (YY through YY)

Include Circuit? : U         Originating Facilities : NEE3-    -    -
Nuclear Origin?  : Y         Failure Degree    :
Bayesian Update? : Y         Failure Severity : C
IRADAP Suitable? : Y         Include System?  : I  Systems : CC-  -  -  -
Safety Grade?    : N
Primary Failure? : U    Subsys. train :

───────────────────────────── REFERENCE INFORMATION ──────────────────────────
  Document Number : 21281      Detail Reference : 5-22

────────────────────────────── ADDITIONAL COMMENTS ───────────────────────────
MEAN = 4.50E-04/D

──────────────────────────────────────────────────────────────────────────────
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Pumps, Motor Driven
      Design: Centrifugal
Normal State: Unspecified
Failure Mode: Fails to Start                         Data Record Number:   1

----------------------------NUCLARR-CALCULATED-RATES------------------------------
  Median:  9.040E-003   Upper Tolerance:  1.573E-002   Aggregation Type: 1
  Mean  :  8.827E-003   Error Factor    :  1.740E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
  Number of Failures    :       7          Number of Components   : ------
  Hours Per Component   : ------------     Demand Per Component   : --------
  Total Component Hours: ------------      Total Component Demand:       793

  Probability/Rate   :  6.410E-003         Type         : MEAN
  Variance           :  7.780E-006         Units        : F/D
  Standard Deviation : ------E----         Distribution : DISCRETE

                       -----Lower-----   -----Upper-----   -Confidence/Coverage-
  Confidence Bounds  : ------E----       ------E----                -- %
  Tolerance Bounds   : ------E----       ------E----                -- %
        Error Factor : ------E----           Sided                  -- %
----------------------------------------------------------------------------------
Component          1: Unknown Internal Environment
Applications       2:
                   3:
----------------------------------------------------------------------------------
                Origin                         Record Type
Failure Data :   PLNT      LERS-CRLB-PMLG-PMTR-SOCR-    -    -    -    -
Exposure Data:   PLNT      TSTR-    -    -    -    -    -    -    -    -

Data Collection Period:  73 through 79 (YY through YY)

Include Circuit? : U          Originating Facilities : IPS2-    -    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : Y          Failure Severity : C
IRADAP Suitable? : Y          Include System?  : I  Systems : AL-  -  -  -
Safety Grade?    : U
Primary Failure? : Y     Subsys. train :
------------------------------ REFERENCE INFORMATION -----------------------------
   Document Number : 20982        Detail Reference : 1.5-59
------------------------------- ADDITIONAL COMMENTS ------------------------------

----------------------------------------------------------------------------------
```

```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Operate                    Data Record Number:   1

-----------------------------NUCLARR-CALCULATED-RATES--------------------------
    Median:  1.568E-002   Upper Tolerance:  1.249E-001   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  7.964E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
    Number of Failures   :      0          Number of Components   : ------
    Hours Per Component  : ------------    Demand Per Component   : --------
    Total Component Hours:            15   Total Component Demand: --------

    Probability/Rate   :  7.000E-006       Type         : MEDIAN
    Variance           :  9.700E-007       Units        : F/H
    Standard Deviation : ------E----       Distribution : DISCRETE

                          ---Lower---      ---Upper---    -Confidence/Coverage-
    Confidence Bounds  : ------E----      ------E----               -- %
    Tolerance Bounds   :  5.900E-007       6.000E-005               90 %
          Error Factor : ------E----         Sided                  -- %

-------------------------------------------------------------------------------
  Component            1: Water, High Purity/Demineralized - Int.
  Applications         2:
                       3:
-------------------------------------------------------------------------------
                  Origin                           Record Type
  Failure Data :   PLNT      PMWR-LERS-INCD-   -    -    -    -    -    -
  Exposure Data:   PLNT      TSTR-PMTR-CRLB-   -    -    -    -    -    -

  Data Collection Period:  75 through 80 (YY through YY)

  Include Circuit? : U          Originating Facilities : NEE3-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?   : I   Systems : BA-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : U     Subsys. train :

---------------------------- REFERENCE INFORMATION -----------------------------
    Document Number : 21281       Detail Reference : 5-21

---------------------------- ADDITIONAL COMMENTS ------------------------------
  MEAN = 2.00E-05/H

-------------------------------------------------------------------------------
```

```
              MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Alternating
  Failure Mode: Fails to Run                           Data Record Number:   1

 ---------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  1.940E-004  Upper Tolerance:  3.000E-004  Aggregation Type: 1
    Mean  :  1.915E-004  Error Factor    :  1.547E+000

 ---------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures    :      13        Number of Components   : ------
    Hours Per Component   : ------------   Demand Per Component   : --------
    Total Component Hours:        67894    Total Component Demand: --------

    Probability/Rate    :  1.910E-004      Type         : MEAN
    Variance            : ------E----      Units        : F/H
    Standard Deviation  : ------E----      Distribution : GAMMA

                          ---Lower---     ---Upper---    -Confidence/Coverage-
    Confidence Bounds   :  8.300E-005      3.000E-004              90 %
    Tolerance Bounds    : ------E----     ------E----              -- %
          Error Factor  : ------E----        Sided                 -- %

 -----------------------------------------------------------------------------
  Component          1: Water, High Purity/Demineralized - Int.
  Applications       2:
                     3:
 -----------------------------------------------------------------------------
                   Origin                     Record Type
  Failure Data :    PLNT      PMLG-CRLB-SURV-LERS-DEVR-OTHR-     -    -    -
  Exposure Data:    PLNT      CRLB-SURV-   -    -    -    -    -    -    -

  Data Collection Period:  70 through 79 (YY through YY)

  Include Circuit? : U          Originating Facilities : BRP1-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : AA-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U     Subsys. train :

 ---------------------------- REFERENCE INFORMATION ---------------------------
     Document Number : 20081        Detail Reference : III-10

 ---------------------------- ADDITIONAL COMMENTS -----------------------------
  FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP ;      EXPRRECTYP
  -OTHR-PLUS 7 HRS/DAY DURING OUTAGES;
 -----------------------------------------------------------------------------
```

```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Pumps, Motor Driven
      Design: Unknown
Normal State: Normally Alternating
Failure Mode: Fails to Run                               Data Record Number:   2

----------------------------NUCLARR-CALCULATED-RATES----------------------------
  Median:  1.359E-005  Upper Tolerance:  3.400E-005  Aggregation Type: 1
  Mean  :  1.141E-005  Error Factor   :  2.503E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------------
  Number of Failures    :       1       Number of Components  : ------
  Hours Per Component   : ------------  Demand Per Component  : --------
  Total Component Hours:        87648   Total Component Demand: --------

  Probability/Rate    :  1.140E-005     Type         : MEAN
  Variance            : ------E----     Units        : F/H
  Standard Deviation  : ------E----     Distribution : GAMMA

                        ----Lower----   ----Upper----  -Confidence/Coverage-
  Confidence Bounds   :  5.600E-006      3.400E-005            90 %
  Tolerance Bounds    : ------E----     ------E----            -- %
        Error Factor  : ------E----        Sided               -- %

--------------------------------------------------------------------------------
Component          1: Water, Borated Internal Environment
Applications       2:
                   3:
--------------------------------------------------------------------------------
                Origin                      Record Type
Failure Data :   PLNT      PMLG-CRLB-SURV-LERS-DEVR-OTHR-    -    -    -
Exposure Data:   PLNT      CRLB-SURV-    -    -    -    -    -    -    -

Data Collection Period:  70 through 79 (YY through YY)

Include Circuit? : U          Originating Facilities : BRP1-    -    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : N          Failure Severity  : C
IRADAP Suitable? : Y          Include System?   : I  Systems : AD-  -  -  -
Safety Grade?    : N
Primary Failure? : U     Subsys. train :

---------------------------- REFERENCE INFORMATION -----------------------------
   Document Number : 20081       Detail Reference : III-10

----------------------------- ADDITIONAL COMMENTS ------------------------------
FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP.

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```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Alternating
  Failure Mode: Fails to Run                         Data Record Number:   3

 ---------------------------NUCLARR-CALCULATED-RATES---------------------------
   Median:  1.274E-004   Upper Tolerance:  2.006E-004   Aggregation Type: 1
   Mean  :  1.255E-004   Error Factor   :  1.574E+000

 ----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
   Number of Failures   :      11        Number of Components   : ------
   Hours Per Component  : ------------   Demand Per Component   : --------
   Total Component Hours:        87648   Total Component Demand: --------

   Probability/Rate    :  1.250E-004     Type          : MEAN
   Variance            : ------E----     Units         : F/H
   Standard Deviation  : ------E----     Distribution  : GAMMA

                          ---Lower---     ---Upper---    -Confidence/Coverage-
   Confidence Bounds   : ------E----     ------E----              -- %
   Tolerance Bounds    : ------E----     ------E----              -- %
         Error Factor  : ------E----        Sided                 -- %

 -------------------------------------------------------------------------------
  Component          1: Water, Borated Internal Environment
  Applications       2:
                     3:
 -------------------------------------------------------------------------------
                  Origin                 Record Type
  Failure Data :   PLNT      PMLG-CRLB-SURV-LERS-DEVR-OTHR-    -    -    -
  Exposure Data:   PLNT      CRLB-SURV-   -    -    -    -    -    -    -

  Data Collection Period:  70 through 79 (YY through YY)

  Include Circuit? : U          Originating Facilities : BRP1-    -    -
  Nuclear Origin?  : Y          Failure Degree     :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I   Systems : DA-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U      Subsys. train :
 ---------------------------- REFERENCE INFORMATION ----------------------------
     Document Number : 20081        Detail Reference : III-10
 ----------------------------- ADDITIONAL COMMENTS -----------------------------
  FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP.

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```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

    Component: Pumps, Motor Driven
       Design: Unknown
 Normal State: Normally Alternating
 Failure Mode: Fails to Run                          Data Record Number:   4

-------------------------NUCLARR-CALCULATED-RATES------------------------------
   Median:  3.179E-006   Upper Tolerance:  2.532E-005   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  7.964E+000

------------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
   Number of Failures   :      0         Number of Components  : ------
   Hours Per Component  : ------------   Demand Per Component  : --------
   Total Component Hours:        74000   Total Component Demand: --------

   Probability/Rate   :  2.760E-006      Type         : MEAN
   Variance           :  1.590E-011      Units        : F/H
   Standard Deviation : ------E----      Distribution : DISCRETE

                       ---Lower---    ---Upper---   -Confidence/Coverage-
   Confidence Bounds  : ------E----    ------E----              -- %
   Tolerance Bounds   : ------E----    ------E----              -- %
         Error Factor : ------E----       Sided                 -- %
-------------------------------------------------------------------------------
 Component          1: Water, High Purity/Demineralized - Int.
 Applications       2:
                    3:
-------------------------------------------------------------------------------
                Origin                   Record Type
 Failure Data :  PLNT      LERS-CRLB-PMLG-PMTR-SOCR-    -    -    -    -
 Exposure Data:  PLNT      MOPR-TSTR-   -    -    -    -    -    -    -

 Data Collection Period:  73 through 79 (YY through YY)

 Include Circuit? : U         Originating Facilities : IPS2-    -    -
 Nuclear Origin?  : Y         Failure Degree   :
 Bayesian Update? : Y         Failure Severity : C
 IRADAP Suitable? : Y         Include System?  : I  Systems : CC-  -  -  -
 Safety Grade?    : N
 Primary Failure? : Y     Subsys. train :
------------------------- REFERENCE INFORMATION -------------------------------
   Document Number : 20982       Detail Reference : 1.5-60
-------------------------- ADDITIONAL COMMENTS --------------------------------


-------------------------------------------------------------------------------
```

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Alternating
  Failure Mode: Fails to Run                      Data Record Number:    5

 ------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  5.471E-003  Upper Tolerance:  4.357E-002  Aggregation Type: 1
    Mean  : +0.000E+000  Error Factor   :  7.964E+000

 --------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
    Number of Failures   :      0       Number of Components   : ------
    Hours Per Component  : ------------  Demand Per Component   : --------
    Total Component Hours:          43   Total Component Demand: --------

    Probability/Rate     :  1.680E-005   Type         : MEAN
    Variance             :  2.760E-008   Units        : F/H
    Standard Deviation : ------E----     Distribution : DISCRETE

                          ----Lower----  ----Upper----  -Confidence/Coverage-
    Confidence Bounds   : ------E----    ------E----              -- %
    Tolerance Bounds    : ------E----    ------E----              -- %
          Error Factor  : ------E----       Sided                 -- %

 ---------------------------------------------------------------------------
  Component          1: Water, High Purity/Demineralized - Int.
  Applications       2:
                     3:
 ---------------------------------------------------------------------------
                   Origin                Record Type
  Failure Data :    PLNT      LERS-CRLB-PMLG-PMTR-SOCR-    -    -    -    -
  Exposure Data:    PLNT      MOPR-TSTR-   -    -    -    -    -    -    -

  Data Collection Period:  73 through 79 (YY through YY)

  Include Circuit? : U       Originating Facilities : IPS2-    -    -
  Nuclear Origin?  : Y       Failure Degree     :
  Bayesian Update? : Y       Failure Severity : C
  IRADAP Suitable? : Y       Include System?  : I  Systems : CC-  -  -  -
  Safety Grade?    : N
  Primary Failure? : Y    Subsys. train :

 ------------------------- REFERENCE INFORMATION ---------------------------
     Document Number : 20982       Detail Reference : 1.5-60

 ------------------------- ADDITIONAL COMMENTS -----------------------------


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```

```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Pumps, Motor Driven
      Design: Unknown
Normal State: Normally Alternating
Failure Mode: Fails to Run                          Data Record Number:   6

-----------------------NUCLARR-CALCULATED-RATES-------------------------------
  Median:  2.948E-005  Upper Tolerance:  7.462E-005   Aggregation Type: 1
  Mean  :  2.703E-005  Error Factor   :  2.532E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
  Number of Failures   :      2         Number of Components   : ------
  Hours Per Component  : ------------   Demand Per Component   : --------
  Total Component Hours:        74000   Total Component Demand: --------

  Probability/Rate    :  1.520E-005     Type          : MEAN
  Variance            :  2.090E-010     Units         : F/H
  Standard Deviation : ------E----      Distribution : DISCRETE

                       ---Lower---    ---Upper---   -Confidence/Coverage-
  Confidence Bounds  : ------E----    ------E----              -- %
  Tolerance Bounds   : ------E----    ------E----              -- %
        Error Factor : ------E----       Sided                 -- %

------------------------------------------------------------------------------
Component          1: Water, High Purity/Demineralized - Int.
Applications       2:
                   3:
------------------------------------------------------------------------------
                 Origin                   Record Type
Failure Data :    PLNT      LERS-CRLB-PMLG-PMTR-SOCR-    -    -    -    -
Exposure Data:    PLNT      MOPR-TSTR-    -    -    -    -    -    -    -

Data Collection Period:  73 through 79 (YY through YY)

Include Circuit? : U          Originating Facilities : IPS2-    -    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : Y          Failure Severity : C
IRADAP Suitable? : Y          Include System?   : I  Systems : CC-  -  -  -
Safety Grade?    : N
Primary Failure? : Y     Subsys. train :

-------------------------- REFERENCE INFORMATION ----------------------------
   Document Number : 20982       Detail Reference : 1.5-60

--------------------------- ADDITIONAL COMMENTS -----------------------------


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MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

Component: Pumps, Motor Driven
Design: Unknown
Normal State: Normally Alternating
Failure Mode: Fails to Run

Data Record Number: 7

NUCLARR-CALCULATED-RATES

Median:	3.844E-005	Upper Tolerance:	6.320E-005	Aggregation Type:	1
Mean :	3.772E-005	Error Factor :	1.644E+000		

REFERENCE-RAW-and-PROBABILITY-DATA

Number of Failures :	9	Number of Components :	------
Hours Per Component :	------------	Demand Per Component :	--------
Total Component Hours:	238572	Total Component Demand:	--------

Probability/Rate :	3.810E-005	Type :	MEAN
Variance :	1.600E-010	Units :	F/H
Standard Deviation :	------E----	Distribution :	GAMMA

	Lower	Upper	-Confidence/Coverage-
Confidence Bounds :	------E----	6.320E-005	95 %
Tolerance Bounds :	------E----	------E----	-- %
Error Factor :	------E----	Sided	-- %

Component Applications
1: Water, High Purity/Demineralized - Int.
2:
3:

	Origin	Record Type
Failure Data :	PLNT	UTDB-LERS-PMLG-SSLB- - - - - - -
Exposure Data:	PLNT	DCCN-PMTR-RHLG- - - - - - - -

Data Collection Period: 71 through 84 (YY through YY)

Include Circuit? :	U	Originating Facilities :	MNS1- - -
Nuclear Origin? :	Y	Failure Degree :	
Bayesian Update? :	Y	Failure Severity :	C
IRADAP Suitable? :	Y	Include System? :	I Systems : CC- - - -
Safety Grade? :	N		
Primary Failure? :	U	Subsys. train :	

REFERENCE INFORMATION

Document Number : 21185
Detail Reference : 3.1-7,12

ADDITIONAL COMMENTS

```
               MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Alternating
  Failure Mode: Fails to Run                              Data Record Number:   8

------------------------------NUCLARR-CALCULATED-RATES----------------------------
    Median:  1.010E-005  Upper Tolerance:  3.310E-005   Aggregation Type: 1
    Mean  :  8.483E-006  Error Factor   :  3.277E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures    :       1        Number of Components   : ------
    Hours Per Component   : ------------   Demand Per Component   : --------
    Total Component Hours:        117883   Total Component Demand: --------

    Probability/Rate    :  9.710E-006      Type         : MEAN
    Variance            :  8.090E-011      Units        : F/H
    Standard Deviation : ------E----       Distribution : GAMMA

                        ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds  : ------E----      3.310E-005             95 %
    Tolerance Bounds   : ------E----     ------E----             -- %
          Error Factor : ------E----        Sided                -- %

----------------------------------------------------------------------------------
  Component           1: Water, High Purity/Demineralized - Int.
  Applications        2:
                      3:
----------------------------------------------------------------------------------
                 Origin                        Record Type
  Failure Data :  PLNT      UTDB-LERS-PMLG-SSLB-   -    -    -    -    -    -
  Exposure Data:  PLNT      DCCN-PMTR-RHLG-   -    -    -    -    -    -    -

  Data Collection Period:  71 through 84 (YY through YY)

  Include Circuit? : U        Originating Facilities : MNS1-     -     -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : Y        Failure Severity : C
  IRADAP Suitable? : Y        Include System?   : I  Systems : CC-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U    Subsys. train :
--------------------------------- REFERENCE INFORMATION --------------------------
     Document Number : 21185        Detail Reference : 3.1-7,12
---------------------------------- ADDITIONAL COMMENTS ---------------------------


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```

```
               MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Alternating
  Failure Mode: Fails to Run                          Data Record Number:   9

 ---------------------------NUCLARR-CALCULATED-RATES----------------------------
   Median:  5.437E-006   Upper Tolerance:  1.775E-005   Aggregation Type: 1
   Mean  :  4.566E-006   Error Factor   :  3.265E+000

 ---------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
   Number of Failures    :       1        Number of Components  : ------
   Hours Per Component   : ------------   Demand Per Component  : --------
   Total Component Hours:        219000   Total Component Demand: --------

   Probability/Rate    :  5.270E-006      Type         : MEAN
   Variance            :  1.380E-011      Units        : F/H
   Standard Deviation  : ------E----      Distribution : GAMMA

                         ---Lower---     ---Upper---    -Confidence/Coverage-
   Confidence Bounds   : ------E----     ------E----             -- %
   Tolerance Bounds    : ------E----     ------E----             -- %
         Error Factor  : ------E----       Sided                 -- %

 -------------------------------------------------------------------------------
 Component          1: Water, High Purity/Demineralized - Int.
 Applications       2:
                    3:
 -------------------------------------------------------------------------------
                 Origin                   Record Type
 Failure Data :   PLNT       UTDB-LERS-INCD-MOPR-   -    -    -    -    -
 Exposure Data:   PLNT       SSLB-SURV-JOBO-    -    -    -    -    -    -

 Data Collection Period:  74 through 83 (YY through YY)

 Include Circuit? : U         Originating Facilities : HNP1-    -    -
 Nuclear Origin?  : Y         Failure Degree    :
 Bayesian Update? : Y         Failure Severity : C
 IRADAP Suitable? : Y         Include System?  : I  Systems : CC-  -  -  -
 Safety Grade?    : N
 Primary Failure? : U     Subsys. train :

 ---------------------------- REFERENCE INFORMATION ----------------------------
    Document Number : 20585        Detail Reference : 4.1-5,12
 ----------------------------- ADDITIONAL COMMENTS -----------------------------


 -------------------------------------------------------------------------------
```

```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Pumps, Motor Driven
         Design: Unknown
   Normal State: Normally Alternating
   Failure Mode: Fails to Run                        Data Record Number:  10

 ---------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  6.797E-006   Upper Tolerance:  2.219E-005   Aggregation Type: 1
    Mean  :  5.708E-006   Error Factor   :  3.265E+000

 ----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures    :      1        Number of Components  : ------
    Hours Per Component   : ------------  Demand Per Component  : --------
    Total Component Hours:       175200   Total Component Demand: --------

    Probability/Rate    :  5.570E-006     Type         : MEAN
    Variance            :  3.710E-011     Units        : F/H
    Standard Deviation : ------E----      Distribution : GAMMA

                         ----Lower----   ----Upper----  -Confidence/Coverage-
    Confidence Bounds   : ------E----     ------E----             -- %
    Tolerance Bounds    : ------E----     ------E----             -- %
          Error Factor : ------E----        Sided                 -- %
 ------------------------------------------------------------------------------
  Component           1: Water, High Purity/Demineralized - Int.
  Applications        2:
                      3:
 ------------------------------------------------------------------------------
                Origin                        Record Type
  Failure Data :  PLNT      UTDB-LERS-INCD-MOPR-   -    -    -    -    -
  Exposure Data:  PLNT      SSLB-SURV-JOBO-    -    -    -    -    -    -

  Data Collection Period:  74 through 83 (YY through YY)

  Include Circuit? : U          Originating Facilities : NMP1-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?   : I  Systems : CC-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U     Subsys. train :
 ------------------------------ REFERENCE INFORMATION -------------------------
     Document Number : 20585        Detail Reference : 4.1-5,11
 ------------------------------- ADDITIONAL COMMENTS --------------------------

 ------------------------------------------------------------------------------
```

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```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

      Component: Pumps, Motor Driven
         Design: Unknown
   Normal State: Normally Alternating
   Failure Mode: Fails to Run                              Data Record Number:  11

 ----------------------------NUCLARR-CALCULATED-RATES-------------------------------
     Median:  1.052E-005   Upper Tolerance:  8.379E-005   Aggregation Type: 1
     Mean  : +0.000E+000   Error Factor   :  7.964E+000

 -------------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
     Number of Failures   :        0       Number of Components   :      3
     Hours Per Component  :         7453   Demand Per Component   : --------
     Total Component Hours: ------------   Total Component Demand: --------

     Probability/Rate     : ------E----    Type         :
     Variance             : ------E----    Units        :
     Standard Deviation   : ------E----    Distribution :

                          ----Lower----    ----Upper----   -Confidence/Coverage-
     Confidence Bounds    : ------E----    ------E----            -- %
     Tolerance Bounds     : ------E----    ------E----            -- %
           Error Factor   : ------E----       Sided               -- %

 -----------------------------------------------------------------------------------
   Component          1:
   Applications       2:
                      3:
 -----------------------------------------------------------------------------------
                 Origin                            Record Type
   Failure Data :  PLNT      LERS-  -   -   -   -   -   -   -   -
   Exposure Data:  PLNT      OTHR-  -   -   -   -   -   -   -   -

   Data Collection Period:  72 through 78 (YY through YY)

   Include Circuit? : U         Originating Facilities : MNS2-    -    -
   Nuclear Origin?  : Y         Failure Degree    :
   Bayesian Update? : N         Failure Severity : C
   IRADAP Suitable? : U         Include System?   : I   Systems : CC-  -  -  -
   Safety Grade?    : U
   Primary Failure? : Y     Subsys. train :

 --------------------------- REFERENCE INFORMATION ---------------------------------
     Document Number :  6380       Detail Reference : TABLE 17

 ---------------------------- ADDITIONAL COMMENTS ----------------------------------


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```

```
         MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Alternating
  Failure Mode: Fails to Run                              Data Record Number:  12

-------------------------NUCLARR-CALCULATED-RATES-------------------------------
    Median:  9.756E-005  Upper Tolerance:  2.470E-004   Aggregation Type: 1
    Mean  :  8.945E-005  Error Factor    :  2.532E+000

-------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------------
    Number of Failures   :       2        Number of Components  :       3
    Hours Per Component  :          7453  Demand Per Component  : --------
    Total Component Hours: ------------   Total Component Demand: --------

    Probability/Rate    : ------E----      Type         :
    Variance            : ------E----      Units        :
    Standard Deviation  : ------E----      Distribution :

                          ---Lower---    ---Upper---    -Confidence/Coverage-
    Confidence Bounds   : ------E----    ------E----              -- %
    Tolerance Bounds    : ------E----    ------E----              -- %
          Error Factor  : ------E----        Sided                -- %

--------------------------------------------------------------------------------
  Component         1:
  Applications      2:
                    3:
--------------------------------------------------------------------------------
                 Origin                            Record Type
  Failure Data :  PLNT       LERS-   -   -   -   -   -   -   -   -
  Exposure Data:  PLNT       OTHR-   -   -   -   -   -   -   -   -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U        Originating Facilities : MNS2-    -    -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : N        Failure Severity  : C
  IRADAP Suitable? : U        Include System?   : I  Systems : CB-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y    Subsys. train :

------------------------------ REFERENCE INFORMATION ---------------------------
     Document Number :  6380        Detail Reference : TABLE 17

------------------------------ ADDITIONAL COMMENTS -----------------------------


--------------------------------------------------------------------------------
```

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Alternating
  Failure Mode: Fails to Run                            Data Record Number:  13

 ------------------------------NUCLARR-CALCULATED-RATES-------------------------------
    Median:  1.578E-005   Upper Tolerance:  1.257E-004   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  7.964E+000

 ---------------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------------
    Number of Failures   :      0          Number of Components  :      2
    Hours Per Component  :         7453    Demand Per Component  : --------
    Total Component Hours: ------------    Total Component Demand: --------

    Probability/Rate   : ------E----       Type         :
    Variance           : ------E----       Units        :
    Standard Deviation : ------E----       Distribution :

                         ---Lower---       ---Upper---    -Confidence/Coverage-
    Confidence Bounds  : ------E----       ------E----              -- %
    Tolerance Bounds   : ------E----       ------E----              -- %
          Error Factor : ------E----          Sided                 -- %

 -------------------------------------------------------------------------------------
  Component         1:
  Applications      2:
                    3:
 -------------------------------------------------------------------------------------
                  Origin                        Record Type
  Failure Data :  PLNT       LERS-    -    -    -    -    -    -    -    -
  Exposure Data:  PLNT       OTHR-    -    -    -    -    -    -    -    -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U        Originating Facilities : MNS2-    -    -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : N        Failure Severity : C
  IRADAP Suitable? : U        Include System?  : I   Systems : CA-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y     Subsys. train :

 -------------------------------- REFERENCE INFORMATION -------------------------------
    Document Number :  6380        Detail Reference : TABLE 17

 --------------------------------- ADDITIONAL COMMENTS --------------------------------


 -------------------------------------------------------------------------------------
```

MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

```
   Component: Pumps, Motor Driven
      Design: Unknown
Normal State: Normally Alternating
Failure Mode: Fails to Run                              Data Record Number:  14

-----------------------------NUCLARR-CALCULATED-RATES----------------------------
  Median:  3.994E-005   Upper Tolerance:  1.304E-004   Aggregation Type: 1
  Mean  :  3.354E-005   Error Factor   :  3.265E+000

--------------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
  Number of Failures    :      1         Number of Components  :      4
  Hours Per Component   :         7453   Demand Per Component  : --------
  Total Component Hours: ------------    Total Component Demand: --------

  Probability/Rate    : ------E----      Type         :
  Variance            : ------E----      Units        :
  Standard Deviation : ------E----       Distribution :

                        ---Lower---     ---Upper---    -Confidence/Coverage-
  Confidence Bounds   : ------E----     ------E----             -- %
  Tolerance Bounds    : ------E----     ------E----             -- %
        Error Factor : ------E----         Sided                -- %

---------------------------------------------------------------------------------
Component          1:
Applications       2:
                   3:
---------------------------------------------------------------------------------
                Origin                          Record Type
Failure Data :   PLNT       LERS-   -   -   -   -   -   -   -   -
Exposure Data:   PLNT       OTHR-   -   -   -   -   -   -   -   -

Data Collection Period:  72 through 78 (YY through YY)

Include Circuit? : U        Originating Facilities : MNS2-    -    -
Nuclear Origin?  : Y        Failure Degree    :
Bayesian Update? : N        Failure Severity : C
IRADAP Suitable? : U        Include System?  : I  Systems : BS-  -  -  -
Safety Grade?    : U
Primary Failure? : Y    Subsys. train :
------------------------------ REFERENCE INFORMATION ----------------------------
  Document Number :  6380       Detail Reference : TABLE 17
------------------------------- ADDITIONAL COMMENTS -----------------------------

---------------------------------------------------------------------------------
```

```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Alternating
  Failure Mode: Fails to Run                             Data Record Number:  15

-------------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  7.333E-006   Upper Tolerance:  5.840E-005   Aggregation Type: 1
    Mean   : +0.000E+000  Error Factor    :  7.964E+000

---------------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
    Number of Failures   :      0          Number of Components   :      3
    Hours Per Component  :          10694  Demand Per Component   : --------
    Total Component Hours: ------------    Total Component Demand: --------

    Probability/Rate     : ------E----     Type          :
    Variance             : ------E----     Units         :
    Standard Deviation   : ------E----     Distribution  :

                           ----Lower----   ----Upper----   -Confidence/Coverage-
    Confidence Bounds    : ------E----     ------E----               -- %
    Tolerance Bounds     : ------E----     ------E----               -- %
          Error Factor   : ------E----        Sided                  -- %

----------------------------------------------------------------------------------
  Component        1:
  Applications     2:
                   3:
----------------------------------------------------------------------------------
                 Origin                         Record Type
  Failure Data :  PLNT      LERS-    -    -    -    -    -    -    -    -
  Exposure Data:  PLNT      OTHR-    -    -    -    -    -    -    -    -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U      Originating Facilities : IPS2-    -    -
  Nuclear Origin?  : Y      Failure Degree    :
  Bayesian Update? : N      Failure Severity  : C
  IRADAP Suitable? : U      Include System?   : I  Systems : CC-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y    Subsys. train :

------------------------------ REFERENCE INFORMATION ------------------------------
    Document Number :  6380       Detail Reference : TABLE 17

------------------------------- ADDITIONAL COMMENTS -------------------------------

----------------------------------------------------------------------------------
```

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Alternating
  Failure Mode: Fails to Run                          Data Record Number:  16

 ---------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  5.567E-005   Upper Tolerance:  1.818E-004   Aggregation Type: 1
    Mean  :  4.676E-005   Error Factor    :  3.265E+000

 ----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures    :       1        Number of Components  :      2
    Hours Per Component   :         10694  Demand Per Component  : --------
    Total Component Hours: ------------    Total Component Demand: --------

    Probability/Rate    : ------E----      Type          :
    Variance            : ------E----      Units         :
    Standard Deviation  : ------E----      Distribution  :

                          ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----              -- %
    Tolerance Bounds    : ------E----      ------E----              -- %
          Error Factor  : ------E----         Sided                 -- %

 ------------------------------------------------------------------------------
  Component          1:
  Applications       2:
                     3:
 ------------------------------------------------------------------------------
                 Origin                         Record Type
  Failure Data :  PLNT       LERS-   -    -    -    -    -    -    -    -
  Exposure Data:  PLNT       OTHR-   -    -    -    -    -    -    -    -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U          Originating Facilities : IPS2-    -    -
  Nuclear Origin?  : Y          Failure Degree   :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : U          Include System?  : I  Systems : CB-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y     Subsys. train :
 ------------------------------ REFERENCE INFORMATION ---------------------------
     Document Number :  6380       Detail Reference : TABLE 17
 ------------------------------- ADDITIONAL COMMENTS ----------------------------


 ------------------------------------------------------------------------------
```

```
       MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Alternating
  Failure Mode: Fails to Run                        Data Record Number:  17

-----------------------NUCLARR-CALCULATED-RATES--------------------------
   Median:  1.100E-005   Upper Tolerance:  8.759E-005   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  7.964E+000

--------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
   Number of Failures    :       0     Number of Components   :      2
   Hours Per Component   :       10694 Demand Per Component   : --------
   Total Component Hours: ------------ Total Component Demand: --------

   Probability/Rate   : ------E----    Type         :
   Variance           : ------E----    Units        :
   Standard Deviation : ------E----    Distribution :

                        ---Lower---     ---Upper---    -Confidence/Coverage-
   Confidence Bounds  : ------E----     ------E----             -- %
   Tolerance Bounds   : ------E----     ------E----             -- %
        Error Factor  : ------E----        Sided                -- %
--------------------------------------------------------------------------
  Component          1:
  Applications       2:
                     3:
--------------------------------------------------------------------------
                  Origin                      Record Type
  Failure Data :  PLNT        LERS-   -   -   -   -   -   -   -   -
  Exposure Data:  PLNT        OTHR-   -   -   -   -   -   -   -   -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U        Originating Facilities : IPS2-    -    -
  Nuclear Origin?  : Y        Failure Degree     :
  Bayesian Update? : N        Failure Severity : C
  IRADAP Suitable? : U        Include System?  : I  Systems : CA-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y     Subsys. train :

--------------------------- REFERENCE INFORMATION ------------------------
    Document Number :  6380       Detail Reference : TABLE 17

---------------------------- ADDITIONAL COMMENTS -------------------------

--------------------------------------------------------------------------
```

```
      MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

   Component: Pumps, Motor Driven
      Design: Unknown
Normal State: Normally Alternating
Failure Mode: Fails to Run                          Data Record Number:  18

-------------------------NUCLARR-CALCULATED-RATES------------------------
  Median:  1.856E-005  Upper Tolerance:  6.059E-005   Aggregation Type: 1
  Mean  :  1.559E-005  Error Factor   :  3.265E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------
  Number of Failures    :       1        Number of Components  :      6
  Hours Per Component   :         10694  Demand Per Component  : --------
  Total Component Hours: ------------    Total Component Demand: --------

  Probability/Rate    : ------E----      Type         :
  Variance            : ------E----      Units        :
  Standard Deviation  : ------E----      Distribution :

                       ----Lower----    ----Upper----  -Confidence/Coverage-
  Confidence Bounds   : ------E----      ------E----               -- %
  Tolerance Bounds    : ------E----      ------E----               -- %
        Error Factor  : ------E----         Sided                  -- %

-------------------------------------------------------------------------
Component           1:
Applications        2:
                    3:
-------------------------------------------------------------------------
                 Origin                     Record Type
Failure Data :   PLNT      LERS-   -    -    -    -    -    -    -    -
Exposure Data:   PLNT      OTHR-   -    -    -    -    -    -    -    -

Data Collection Period:  72 through 78 (YY through YY)

Include Circuit? : U         Originating Facilities : IPS2-     -    -
Nuclear Origin?  : Y         Failure Degree    :
Bayesian Update? : N         Failure Severity : C
IRADAP Suitable? : U         Include System?  : I  Systems : BS-  -  -  -
Safety Grade?    : U
Primary Failure? : Y    Subsys. train :

--------------------------- REFERENCE INFORMATION -----------------------
   Document Number :  6380       Detail Reference : TABLE 17

---------------------------- ADDITIONAL COMMENTS ------------------------


-------------------------------------------------------------------------
```

```
         MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Alternating
  Failure Mode: Fails to Run                        Data Record Number:  19

-------------------------NUCLARR-CALCULATED-RATES-------------------------
    Median:  1.341E-005   Upper Tolerance:  1.068E-004   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  7.964E+000

---------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
    Number of Failures    :      0     Number of Components   :     3
    Hours Per Component   :       5847 Demand Per Component   : --------
    Total Component Hours: ------------ Total Component Demand: --------

    Probability/Rate    : ------E----     Type         :
    Variance            : ------E----     Units        :
    Standard Deviation  : ------E----     Distribution :

                          ---Lower---     ---Upper---    -Confidence/Coverage-
    Confidence Bounds   : ------E----     ------E----               -- %
    Tolerance Bounds    : ------E----     ------E----               -- %
         Error Factor   : ------E----        Sided                  -- %

---------------------------------------------------------------------------
  Component        1:
  Applications     2:
                   3:
---------------------------------------------------------------------------
                Origin                        Record Type
  Failure Data :  PLNT      LERS-  -   -   -   -   -   -   -   -
  Exposure Data:  PLNT      OTHR-  -   -   -   -   -   -   -   -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U         Originating Facilities : IPS3-   -   -
  Nuclear Origin?  : Y         Failure Degree   :
  Bayesian Update? : N         Failure Severity : C
  IRADAP Suitable? : U         Include System?  : I  Systems : CC-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y     Subsys. train :

------------------------- REFERENCE INFORMATION ---------------------------
    Document Number :  6380        Detail Reference : TABLE 17

--------------------------- ADDITIONAL COMMENTS ---------------------------


---------------------------------------------------------------------------
```

```
              MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Alternating
  Failure Mode: Fails to Run                              Data Record Number:  20

----------------------------NUCLARR-CALCULATED-RATES-------------------------------
   Median:  1.341E-005   Upper Tolerance:  1.068E-004   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  7.964E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------------
   Number of Failures    :      0        Number of Components  :      3
   Hours Per Component   :         5847  Demand Per Component  : --------
   Total Component Hours: ------------   Total Component Demand: --------

   Probability/Rate    : ------E----     Type         :
   Variance            : ------E----     Units        :
   Standard Deviation  : ------E----     Distribution :

                        ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds   : ------E----     ------E----             -- %
   Tolerance Bounds    : ------E----     ------E----             -- %
         Error Factor  : ------E----        Sided                -- %

-----------------------------------------------------------------------------------
  Component          1:
  Applications       2:
                     3:
-----------------------------------------------------------------------------------
                   Origin                          Record Type
  Failure Data :   PLNT      LERS-    -    -    -    -    -    -    -    -
  Exposure Data:   PLNT      OTHR-    -    -    -    -    -    -    -    -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U         Originating Facilities : IPS3-    -    -
  Nuclear Origin?  : Y         Failure Degree   :
  Bayesian Update? : N         Failure Severity : C
  IRADAP Suitable? : U         Include System?  : I  Systems : CB-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y     Subsys. train :

---------------------------- REFERENCE INFORMATION --------------------------------
     Document Number :  6380       Detail Reference : TABLE 17

------------------------------ ADDITIONAL COMMENTS --------------------------------


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```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

      Component: Pumps, Motor Driven
         Design: Unknown
   Normal State: Normally Alternating
   Failure Mode: Fails to Run                         Data Record Number:  21

 ------------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  2.012E-005   Upper Tolerance:  1.602E-004   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  7.964E+000

 -------------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures   :      0        Number of Components  :      2
    Hours Per Component  :         5847  Demand Per Component  : --------
    Total Component Hours: ------------  Total Component Demand: --------

    Probability/Rate     : ------E----   Type         :
    Variance             : ------E----   Units        :
    Standard Deviation   : ------E----   Distribution :

                           ----Lower----   ----Upper----   -Confidence/Coverage-
    Confidence Bounds    : ------E----     ------E----                -- %
    Tolerance Bounds     : ------E----     ------E----                -- %
          Error Factor   : ------E----        Sided                   -- %

 ---------------------------------------------------------------------------------
   Component         1:
   Applications      2:
                     3:
 ---------------------------------------------------------------------------------
                  Origin                          Record Type
   Failure Data :  PLNT       LERS-    -    -    -    -    -    -    -    -
   Exposure Data:  PLNT       OTHR-    -    -    -    -    -    -    -    -

   Data Collection Period:  72 through 78 (YY through YY)

   Include Circuit? : U          Originating Facilities : IPS3-    -    -
   Nuclear Origin?  : Y          Failure Degree    :
   Bayesian Update? : N          Failure Severity  : C
   IRADAP Suitable? : U          Include System?  : I  Systems : CA-  -  -  -
   Safety Grade?    : U
   Primary Failure? : Y     Subsys. train :

 ----------------------------- REFERENCE INFORMATION -----------------------------
     Document Number :  6380      Detail Reference : TABLE 17

 ------------------------------ ADDITIONAL COMMENTS ------------------------------


 ---------------------------------------------------------------------------------
```

```
         MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

      Component: Pumps, Motor Driven
         Design: Unknown
   Normal State: Normally Alternating
   Failure Mode: Fails to Run                      Data Record Number:  22

--------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  6.706E-006   Upper Tolerance:  5.340E-005   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  7.964E+000

---------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures   :      0         Number of Components  :      6
    Hours Per Component  :          5847  Demand Per Component  : --------
    Total Component Hours: ------------   Total Component Demand: --------

    Probability/Rate   : ------E----      Type         :
    Variance           : ------E----      Units        :
    Standard Deviation : ------E----      Distribution :

                         ----Lower----   ----Upper----  -Confidence/Coverage-
    Confidence Bounds  : ------E----     ------E----               -- %
    Tolerance Bounds   : ------E----     ------E----               -- %
          Error Factor : ------E----        Sided                  -- %
-----------------------------------------------------------------------------
  Component          1:
  Applications       2:
                     3:
-----------------------------------------------------------------------------
                 Origin                         Record Type
  Failure Data :  PLNT      LERS-   -    -    -    -    -    -    -    -
  Exposure Data:  PLNT      OTHR-   -    -    -    -    -    -    -    -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U          Originating Facilities : IPS3-    -    -
  Nuclear Origin?  : Y          Failure Degree   :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : U          Include System?  : I  Systems : BS-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y    Subsys. train :
---------------------------- REFERENCE INFORMATION --------------------------
     Document Number :  6380       Detail Reference : TABLE 17
----------------------------- ADDITIONAL COMMENTS ---------------------------


-----------------------------------------------------------------------------
```

```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Alternating
  Failure Mode: Fails to Run                                Data Record Number:  23

 ------------------------------NUCLARR-CALCULATED-RATES------------------------------
    Median:  2.581E-006   Upper Tolerance:  2.055E-005   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor    :  7.964E+000

 ---------------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures    :       0       Number of Components  :      4
    Hours Per Component   :       22787   Demand Per Component  : --------
    Total Component Hours: ------------   Total Component Demand: --------

    Probability/Rate    : ------E----     Type         :
    Variance            : ------E----     Units        :
    Standard Deviation  : ------E----     Distribution :

                          ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----             -- %
    Tolerance Bounds    : ------E----      ------E----             -- %
          Error Factor  : ------E----         Sided                -- %

 ------------------------------------------------------------------------------------
  Component        1:
  Applications     2:
                   3:
 ------------------------------------------------------------------------------------
                  Origin                       Record Type
  Failure Data :   PLNT      LERS-    -    -    -    -    -    -    -    -
  Exposure Data:   PLNT      OTHR-    -    -    -    -    -    -    -    -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U         Originating Facilities : HNP1-    -    -
  Nuclear Origin?  : Y         Failure Degree    :
  Bayesian Update? : N         Failure Severity : C
  IRADAP Suitable? : U         Include System?  : I   Systems : BS-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y     Subsys. train :

 ---------------------------- REFERENCE INFORMATION ---------------------------------
    Document Number :  6380      Detail Reference : TABLE 17
 ---------------------------- ADDITIONAL COMMENTS -----------------------------------


 ------------------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Alternating
  Failure Mode: Fails to Run                          Data Record Number:  24

 ------------------------NUCLARR-CALCULATED-RATES-------------------------------
   Median:  4.786E-005   Upper Tolerance:  1.212E-004   Aggregation Type: 1
   Mean  :  4.388E-005   Error Factor   :  2.532E+000

 ---------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------------
   Number of Failures    :      2        Number of Components   :      2
   Hours Per Component   :       22787   Demand Per Component   : --------
   Total Component Hours: ------------   Total Component Demand: --------

   Probability/Rate    : ------E----     Type         :
   Variance            : ------E----     Units        :
   Standard Deviation : ------E----      Distribution :

                        ----Lower----   ----Upper----  -Confidence/Coverage-
   Confidence Bounds  : ------E----     ------E----             -- %
   Tolerance Bounds   : ------E----     ------E----             -- %
         Error Factor : ------E----        Sided                -- %
 -------------------------------------------------------------------------------
  Component          1:
  Applications       2:
                     3:
 -------------------------------------------------------------------------------
                Origin                             Record Type
  Failure Data :  PLNT      LERS-   -    -    -    -    -    -    -    -
  Exposure Data:  PLNT      OTHR-   -    -    -    -    -    -    -    -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U          Originating Facilities : HNP1-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : U          Include System?  : I  Systems : CA-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y      Subsys. train :
 --------------------------- REFERENCE INFORMATION -----------------------------
     Document Number :  6380       Detail Reference : TABLE 17
 ---------------------------- ADDITIONAL COMMENTS ------------------------------


 -------------------------------------------------------------------------------
```

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

      Component: Pumps, Motor Driven
         Design: Unknown
   Normal State: Normally Alternating
   Failure Mode: Fails to Run                      Data Record Number:  25

 ---------------------------NUCLARR-CALCULATED-RATES--------------------------
    Median:  3.191E-005   Upper Tolerance:  8.078E-005   Aggregation Type: 1
    Mean  :  2.926E-005   Error Factor   :  2.532E+000

 ----------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
    Number of Failures     :       2      Number of Components   :      3
    Hours Per Component    :       22787  Demand Per Component   : --------
    Total Component Hours: ------------   Total Component Demand: --------

    Probability/Rate    : ------E----     Type         :
    Variance            : ------E----     Units        :
    Standard Deviation  : ------E----     Distribution :

                          ----Lower----   ----Upper----  -Confidence/Coverage-
    Confidence Bounds   : ------E----     ------E----            -- %
    Tolerance Bounds    : ------E----     ------E----            -- %
          Error Factor  : ------E----        Sided               -- %
 -----------------------------------------------------------------------------
  Component          1:
  Applications       2:
                     3:
 -----------------------------------------------------------------------------
                  Origin                        Record Type
  Failure Data :  PLNT      LERS-   -   -   -   -   -   -   -   -
  Exposure Data:  PLNT      OTHR-   -   -   -   -   -   -   -   -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U          Originating Facilities : HNP1-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : N          Failure Severity  : C
  IRADAP Suitable? : U          Include System?   : I  Systems : CB-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y      Subsys. train :

 --------------------------- REFERENCE INFORMATION ---------------------------
    Document Number :  6380      Detail Reference : TABLE 17

 ---------------------------- ADDITIONAL COMMENTS ----------------------------

 -----------------------------------------------------------------------------
```

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

    Component: Pumps, Motor Driven
       Design: Unknown
 Normal State: Normally Alternating
 Failure Mode: Fails to Run                            Data Record Number:  26

------------------------------NUCLARR-CALCULATED-RATES-------------------------------
   Median:  3.441E-006   Upper Tolerance:  2.741E-005   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  7.964E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------------
   Number of Failures    :       0        Number of Components  :      3
   Hours Per Component   :        22787   Demand Per Component  : --------
   Total Component Hours: ------------    Total Component Demand: --------

   Probability/Rate    : ------E----       Type         :
   Variance            : ------E----       Units        :
   Standard Deviation  : ------E----       Distribution :

                         ----Lower----   ----Upper----   -Confidence/Coverage-
   Confidence Bounds   : ------E----     ------E----              -- %
   Tolerance Bounds    : ------E----     ------E----              -- %
         Error Factor  : ------E----        Sided                 -- %

-------------------------------------------------------------------------------------
 Component           1:
 Applications        2:
                     3:
-------------------------------------------------------------------------------------
                 Origin                          Record Type
 Failure Data :   PLNT       LERS-   -    -    -    -    -    -    -    -
 Exposure Data:   PLNT       OTHR-   -    -    -    -    -    -    -    -

 Data Collection Period:  72 through 78 (YY through YY)

 Include Circuit? : U          Originating Facilities : HNP1-    -    -
 Nuclear Origin?  : Y          Failure Degree    :
 Bayesian Update? : N          Failure Severity : C
 IRADAP Suitable? : U          Include System?  : I  Systems : CC-  -  -  -
 Safety Grade?    : U
 Primary Failure? : Y     Subsys. train :

---------------------------- REFERENCE INFORMATION ----------------------------------
   Document Number :  6380        Detail Reference : TABLE 17

------------------------------ ADDITIONAL COMMENTS ----------------------------------


-------------------------------------------------------------------------------------
```

```
         MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Running
  Failure Mode: Fails to Run                          Data Record Number:   1

 ---------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  2.658E-005  Upper Tolerance:  5.400E-005  Aggregation Type: 1
    Mean  :  2.510E-005  Error Factor    :  2.031E+000

 -----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures   :      3           Number of Components   : ------
    Hours Per Component  : ------------     Demand Per Component   : --------
    Total Component Hours:        119520    Total Component Demand: --------

    Probability/Rate    :  2.500E-005       Type          : MEAN
    Variance            : ------E----       Units         : F/H
    Standard Deviation  : ------E----       Distribution  : GAMMA

                          ---Lower---      ---Upper---   -Confidence/Coverage-
    Confidence Bounds   :  3.700E-006       5.400E-005            90 %
    Tolerance Bounds    : ------E----      ------E----            -- %
          Error Factor  : ------E----         Sided               -- %

 ------------------------------------------------------------------------------
  Component          1: Water, High Purity/Demineralized - Int.
  Applications       2:
                     3:
 ------------------------------------------------------------------------------
                 Origin                   Record Type
  Failure Data :  PLNT      PMLG-CRLB-SURV-LERS-DEVR-OTHR-    -    -    -
  Exposure Data:  PLNT      CRLB-SURV-   -    -    -    -    -    -    -

  Data Collection Period:  70 through 79 (YY through YY)

  Include Circuit? : U          Originating Facilities : BRP1-    -    -
  Nuclear Origin?  : Y          Failure Degree     :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I   Systems : SG-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U      Subsys. train :

 --------------------------- REFERENCE INFORMATION ----------------------------
    Document Number : 20081       Detail Reference : III-10

 ---------------------------- ADDITIONAL COMMENTS -----------------------------
  FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP.

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```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Running
  Failure Mode: Fails to Run                        Data Record Number:   2

 ------------------------NUCLARR-CALCULATED-RATES-----------------------------
   Median:  7.089E-005   Upper Tolerance:  1.100E-004   Aggregation Type: 1
   Mean  :  6.693E-005   Error Factor   :  1.552E+000

 ----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
   Number of Failures   :       3       Number of Components  : ------
   Hours Per Component  : ------------  Demand Per Component  : --------
   Total Component Hours:        44820  Total Component Demand: --------

   Probability/Rate   :  6.690E-005     Type          : MEAN
   Variance           : ------E----     Units         : F/H
   Standard Deviation : ------E----     Distribution  : GAMMA

                        ----Lower----   ----Upper----   -Confidence/Coverage-
   Confidence Bounds  :  2.000E-005      1.100E-004              90 %
   Tolerance Bounds   : ------E----     ------E----              -- %
         Error Factor : ------E----        Sided                 -- %

 -----------------------------------------------------------------------------
  Component          1: Water, High Purity/Demineralized - Int.
  Applications       2:
                     3:
 -----------------------------------------------------------------------------
                 Origin                   Record Type
  Failure Data :  PLNT      PMLG-CRLB-SURV-LERS-DEVR-OTHR-    -    -    -
  Exposure Data:  PLNT      CRLB-SURV-  -    -    -    -    -    -    -

  Data Collection Period:  70 through 79 (YY through YY)

  Include Circuit? : U          Originating Facilities : BRP1-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : KC-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U     Subsys. train :

 ------------------------- REFERENCE INFORMATION ----------------------------
   Document Number : 20081       Detail Reference : III-10

 -------------------------- ADDITIONAL COMMENTS -----------------------------
  FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP.;     EXPRRECTYP
  -OTHR-75% OF TCRT;
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```
         MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

    Component: Pumps, Motor Driven
       Design: Unknown
 Normal State: Normally Running
 Failure Mode: Fails to Run                                Data Record Number:   3

--------------------------NUCLARR-CALCULATED-RATES--------------------------------
   Median:  3.054E-004   Upper Tolerance:  4.500E-004   Aggregation Type: 1
   Mean  :  3.012E-004   Error Factor   :  1.474E+000

---------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------------
   Number of Failures   :      18          Number of Components  : ------
   Hours Per Component  : ------------     Demand Per Component  : --------
   Total Component Hours:        59760     Total Component Demand: --------

   Probability/Rate   :  3.010E-004        Type         : MEAN
   Variance           : ------E----        Units        : F/H
   Standard Deviation : ------E----        Distribution : GAMMA

                        ---Lower---     ---Upper---    -Confidence/Coverage-
   Confidence Bounds  :  1.600E-004      4.500E-004              90 %
   Tolerance Bounds   : ------E----     ------E----              -- %
         Error Factor : ------E----        Sided                 -- %

----------------------------------------------------------------------------------
 Component          1: Water, Borated Internal Environment
 Applications       2:
                    3:
----------------------------------------------------------------------------------
                Origin                       Record Type
 Failure Data :  PLNT      PMLG-CRLB-SURV-LERS-DEVR-OTHR-    -    -    -
 Exposure Data:  PLNT      CRLB-SURV-   -    -    -    -    -    -    -

 Data Collection Period:  70 through 79 (YY through YY)

 Include Circuit? : U        Originating Facilities : BRP1-    -    -
 Nuclear Origin?  : Y        Failure Degree    :
 Bayesian Update? : N        Failure Severity : C
 IRADAP Suitable? : Y        Include System?  : I  Systems : CE-  -  -  -
 Safety Grade?    : N
 Primary Failure? : U     Subsys. train :

-------------------------- REFERENCE INFORMATION ---------------------------------
   Document Number : 20081        Detail Reference : III-10

--------------------------- ADDITIONAL COMMENTS ----------------------------------
 FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP.

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             MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Pumps, Motor Driven
         Design: Unknown
   Normal State: Normally Running
   Failure Mode: Fails to Run                             Data Record Number:   4

------------------------------NUCLARR-CALCULATED-RATES----------------------------
    Median:  1.825E-005  Upper Tolerance:  4.000E-005  Aggregation Type: 1
    Mean  :  1.673E-005  Error Factor   :  2.192E+000

---------------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
    Number of Failures    :       2         Number of Components   : ------
    Hours Per Component   : ------------    Demand Per Component   : --------
    Total Component Hours:        119520    Total Component Demand: --------

    Probability/Rate     :  1.670E-005      Type          : MEAN
    Variance             : ------E----      Units         : F/H
    Standard Deviation   : ------E----      Distribution  : GAMMA

                           ----Lower----   ----Upper----   -Confidence/Coverage-
    Confidence Bounds    :  6.600E-006      4.000E-005             90 %
    Tolerance Bounds     : ------E----     ------E----             -- %
          Error Factor   : ------E----        Sided                -- %

----------------------------------------------------------------------------------
  Component          1: Water, High Purity/Demineralized - Int.
  Applications       2:
                     3:
----------------------------------------------------------------------------------
                 Origin                    Record Type
  Failure Data :  PLNT       PMLG-CRLB-SURV-LERS-DEVR-OTHR-    -    -    -
  Exposure Data:  PLNT       CRLB-SURV-  -    -    -    -    -    -    -    -

  Data Collection Period:  70 through 79 (YY through YY)

  Include Circuit? : U         Originating Facilities : BRP1-    -    -
  Nuclear Origin?  : Y         Failure Degree    :
  Bayesian Update? : N         Failure Severity : C
  IRADAP Suitable? : Y         Include System?  : I  Systems : SD-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U     Subsys. train :

--------------------------- REFERENCE INFORMATION --------------------------------
    Document Number : 20081        Detail Reference : III-10

---------------------------- ADDITIONAL COMMENTS ---------------------------------
  FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP.

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         MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Running
  Failure Mode: Fails to Run                          Data Record Number:   5

-------------------------------NUCLARR-CALCULATED-RATES-------------------------
    Median:  1.066E-005   Upper Tolerance:  3.500E-005   Aggregation Type: 1
    Mean  :  8.952E-006   Error Factor   :  3.283E+000

----------------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------
    Number of Failures   :       1        Number of Components  : ------
    Hours Per Component  : ------------   Demand Per Component  : --------
    Total Component Hours:        111704  Total Component Demand: --------

    Probability/Rate     :  1.020E-005    Type          : MEAN
    Variance             :  8.990E-011    Units         : F/H
    Standard Deviation : ------E----      Distribution  : GAMMA

                          ----Lower----   ----Upper----  -Confidence/Coverage-
    Confidence Bounds  : ------E----       3.500E-005           95 %
    Tolerance Bounds   : ------E----      ------E----           -- %
          Error Factor : ------E----         Sided              -- %

--------------------------------------------------------------------------------
  Component          1: Water, High Purity/Demineralized - Int.
  Applications       2:
                     3:
--------------------------------------------------------------------------------
                 Origin                        Record Type
  Failure Data :  PLNT      UTDB-LERS-PMLG-SSLB-   -   -   -   -   -
  Exposure Data:  PLNT      DCCN-PMTR-RHLG-    -   -   -   -   -   -

  Data Collection Period:  71 through 84 (YY through YY)

  Include Circuit? : U       Originating Facilities : MNS1-    -    -
  Nuclear Origin?  : Y       Failure Degree    :
  Bayesian Update? : Y       Failure Severity : C
  IRADAP Suitable? : Y       Include System?  : I   Systems : KB-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U    Subsys. train :

------------------------------- REFERENCE INFORMATION --------------------------
    Document Number : 21185       Detail Reference : 3.1-7,12

-------------------------------- ADDITIONAL COMMENTS ---------------------------

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```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Running
  Failure Mode: Fails to Run                          Data Record Number:   6

-------------------------NUCLARR-CALCULATED-RATES------------------------
    Median:  5.112E-005  Upper Tolerance:  8.400E-005  Aggregation Type: 1
    Mean  :  5.017E-005  Error Factor   :  1.643E+000

--------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------
    Number of Failures    :      9         Number of Components   : ------
    Hours Per Component   : ------------   Demand Per Component   : --------
    Total Component Hours:        179390   Total Component Demand: --------

    Probability/Rate   :  5.050E-005       Type         : MEAN
    Variance           :  2.780E-010       Units        : F/H
    Standard Deviation : ------E----       Distribution : GAMMA

                          ---Lower---     ---Upper---   -Confidence/Coverage-
    Confidence Bounds  : ------E----      8.400E-005            95 %
    Tolerance Bounds   : ------E----     ------E----            -- %
          Error Factor : ------E----        Sided               -- %

-------------------------------------------------------------------------
  Component            1: Water, High Purity/Demineralized - Int.
  Applications         2:
                       3:
-------------------------------------------------------------------------
                Origin                      Record Type
  Failure Data :  PLNT      UTDB-LERS-PMLG-SSLB-   -    -    -    -    -
  Exposure Data:  PLNT      DCCN-PMTR-RHLG-   -    -    -    -    -    -

  Data Collection Period:  71 through 84 (YY through YY)

  Include Circuit? : U        Originating Facilities : MNS1-    -    -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : Y        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I  Systems : SD-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U     Subsys. train :

-------------------------- REFERENCE INFORMATION ------------------------
    Document Number : 21185        Detail Reference : 3.1-7,13

--------------------------- ADDITIONAL COMMENTS -------------------------


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```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Running
  Failure Mode: Fails to Run                            Data Record Number:   7

 ----------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  1.246E-006   Upper Tolerance:  1.020E-005   Aggregation Type: 1
    Mean   : +0.000E+000  Error Factor    :  8.185E+000

 -----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures   :      0        Number of Components   : ------
    Hours Per Component  : ------------  Demand Per Component   : --------
    Total Component Hours:       188787  Total Component Demand: --------

    Probability/Rate   :  8.600E-007     Type          : MEAN
    Variance           :  4.510E-012     Units         : F/H
    Standard Deviation : ------E----     Distribution  : GAMMA

                          ----Lower----  ----Upper----  -Confidence/Coverage-
    Confidence Bounds  :  ------E----     1.020E-005           95 %
    Tolerance Bounds   :  ------E----     ------E----          -- %
          Error Factor :  ------E----       Sided              -- %

 -------------------------------------------------------------------------------
  Component          1: Water, High Purity/Demineralized - Int.
  Applications       2:
                     3:
 -------------------------------------------------------------------------------
                  Origin                       Record Type
  Failure Data :   PLNT      UTDB-LERS-PMLG-SSLB-    -    -    -    -    -
  Exposure Data:   PLNT      DCCN-PMTR-RHLG-    -    -    -    -    -    -

  Data Collection Period:  71 through 84 (YY through YY)

  Include Circuit? : U          Originating Facilities : MNS1-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I   Systems : SD-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U     Subsys. train :

 ------------------------------ REFERENCE INFORMATION --------------------------
     Document Number : 21185       Detail Reference : 3.1-7,13
 ------------------------------ ADDITIONAL COMMENTS ----------------------------


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```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Running
  Failure Mode: Fails to Run                        Data Record Number:   8

------------------------------NUCLARR-CALCULATED-RATES------------------------------
   Median:  1.941E-006   Upper Tolerance:  1.545E-005   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  7.964E+000

--------------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
   Number of Failures   :      0        Number of Components  :       3
   Hours Per Component  :        40408  Demand Per Component  : --------
   Total Component Hours: ------------  Total Component Demand: --------

   Probability/Rate    : ------E----    Type         :
   Variance            : ------E----    Units        :
   Standard Deviation  : ------E----    Distribution :

                         ---Lower---    ---Upper---   -Confidence/Coverage-
   Confidence Bounds   : ------E----    ------E----             -- %
   Tolerance Bounds    : ------E----    ------E----             -- %
        Error Factor   : ------E----       Sided                -- %

------------------------------------------------------------------------------------
 Component         1:
 Applications      2:
                   3:
------------------------------------------------------------------------------------
                 Origin                        Record Type
 Failure Data :   PLNT      LERS-   -    -    -    -    -    -    -    -
 Exposure Data:   PLNT      TCRT-   -    -    -    -    -    -    -    -

 Data Collection Period:  72 through 78 (YY through YY)

 Include Circuit? : U         Originating Facilities : MYP1-    -    -
 Nuclear Origin?  : Y         Failure Degree    :
 Bayesian Update? : N         Failure Severity : C
 IRADAP Suitable? : U         Include System?  : I  Systems : AB-  -  -  -
 Safety Grade?    : U
 Primary Failure? : U     Subsys. train :

------------------------------ REFERENCE INFORMATION ------------------------------
   Document Number :  6380      Detail Reference : TABLE 17
------------------------------- ADDITIONAL COMMENTS -------------------------------

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```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

      Component: Pumps, Motor Driven
         Design: Unknown
   Normal State: Normally Running
   Failure Mode: Fails to Run                          Data Record Number:    9

 ───────────────────────NUCLARR-CALCULATED-RATES──────────────────────────────
    Median:  3.946E-006   Upper Tolerance:  3.142E-005   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  7.964E+000

 ───────────────────REFERENCE-RAW-and-PROBABILITY-DATA────────────────────────
    Number of Failures   :       0          Number of Components  :     4
    Hours Per Component  :         14906    Demand Per Component  : --------
    Total Component Hours: ------------     Total Component Demand: --------

    Probability/Rate     : ------E----      Type          :
    Variance             : ------E----      Units         :
    Standard Deviation   : ------E----      Distribution  :

                           ───Lower───    ───Upper───   -Confidence/Coverage-
    Confidence Bounds    : ------E----    ------E----              -- %
    Tolerance Bounds     : ------E----    ------E----              -- %
          Error Factor   : ------E----       Sided                 -- %
 ─────────────────────────────────────────────────────────────────────────────
   Component          1:
   Applications       2:
                      3:
 ─────────────────────────────────────────────────────────────────────────────
                    Origin                     Record Type
   Failure Data :    PLNT       LERS-   -    -    -    -    -    -    -    -
   Exposure Data:    PLNT       TCRT-   -    -    -    -    -    -    -    -

   Data Collection Period:  72 through 78 (YY through YY)

   Include Circuit? : U         Originating Facilities : MNS2-    -    -
   Nuclear Origin?  : Y         Failure Degree    :
   Bayesian Update? : N         Failure Severity  : C
   IRADAP Suitable? : U         Include System?   : I  Systems : AB-  -  -  -
   Safety Grade?    : U
   Primary Failure? : Y     Subsys. train :
 ─────────────────────────── REFERENCE INFORMATION ───────────────────────────
      Document Number :    63       Detail Reference : TABLE 17
 ──────────────────────────── ADDITIONAL COMMENTS ────────────────────────────

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```

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

    Component: Pumps, Motor Driven
       Design: Unknown
 Normal State: Normally Running
 Failure Mode: Fails to Run                          Data Record Number:  10

 ----------------------------NUCLARR-CALCULATED-RATES-------------------------
   Median:  2.750E-006  Upper Tolerance:  2.190E-005  Aggregation Type: I
   Mean  : +0.000E+000  Error Factor   :  7.964E+000

 -----------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
   Number of Failures   :      0         Number of Components   :      4
   Hours Per Component  :         21387  Demand Per Component   : --------
   Total Component Hours: ------------   Total Component Demand: --------

   Probability/Rate    : ------E----     Type         :
   Variance            : ------E----     Units        :
   Standard Deviation  : ------E----     Distribution :

                          ----Lower----   ----Upper----   -Confidence/Coverage-
   Confidence Bounds   : ------E----     ------E----               -- %
   Tolerance Bounds    : ------E----     ------E----               -- %
         Error Factor  : ------E----        Sided                  -- %

 -----------------------------------------------------------------------------
 Component           1:
 Applications        2:
                     3:
 -----------------------------------------------------------------------------
               Origin                      Record Type
 Failure Data :  PLNT       LERS-   -   -   -   -   -   -   -   -
 Exposure Data:  PLNT       TCRT-   -   -   -   -   -   -   -   -

 Data Collection Period:  72 through 78 (YY through YY)

 Include Circuit? : U          Originating Facilities : IPS2-    -    -
 Nuclear Origin?  : Y          Failure Degree   :
 Bayesian Update? : N          Failure Severity : C
 IRADAP Suitable? : U          Include System?  : I  Systems : AB-  -  -  -
 Safety Grade?    : U
 Primary Failure? : Y     Subsys. train :

 ---------------------------- REFERENCE INFORMATION --------------------------
   Document Number :  6380      Detail Reference : TABLE 17
 ---------------------------- ADDITIONAL COMMENTS ----------------------------


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```
         MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Running
  Failure Mode: Fails to Run                       Data Record Number:  11

-----------------------NUCLARR-CALCULATED-RATES-----------------------------
   Median:  5.029E-006   Upper Tolerance:  4.005E-005   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  7.964E+000

--------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
   Number of Failures   :        0        Number of Components  :        4
   Hours Per Component  :        11694    Demand Per Component  : --------
   Total Component Hours: ------------    Total Component Demand: --------

   Probability/Rate     : ------E----     Type          :
   Variance             : ------E----     Units         :
   Standard Deviation   : ------E----     Distribution  :

                          ---Lower---      ---Upper---    -Confidence/Coverage-
   Confidence Bounds    : ------E----      ------E----              -- %
   Tolerance Bounds     : ------E----      ------E----              -- %
         Error Factor   : ------E----         Sided                 -- %
----------------------------------------------------------------------------
 Component         1:
 Applications      2:
                   3:
----------------------------------------------------------------------------
                 Origin                     Record Type
 Failure Data :   PLNT      LERS-   -   -   -   -   -   -   -   -
 Exposure Data:   PLNT      TCRT-   -   -   -   -   -   -   -   -

 Data Collection Period:  72 through 78 (YY through YY)

 Include Circuit? : U      Originating Facilities : IPS3-    -    -
 Nuclear Origin?  : Y      Failure Degree     :
 Bayesian Update? : N      Failure Severity : C
 IRADAP Suitable? : U      Include System?  : I  Systems : AB-  -  -  -
 Safety Grade?    : U
 Primary Failure? : Y    Subsys. train :
-------------------------- REFERENCE INFORMATION ----------------------------
   Document Number :  6380      Detail Reference : TABLE 17
--------------------------- ADDITIONAL COMMENTS -----------------------------


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```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Running
  Failure Mode: Fails to Run                         Data Record Number:  12

------------------------NUCLARR-CALCULATED-RATES-------------------------
   Median:  1.291E-006  Upper Tolerance:  1.028E-005  Aggregation Type: 1
   Mean  : +0.000E+000  Error Factor    :  7.964E+000

---------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------
   Number of Failures   :      0       Number of Components   :     4
   Hours Per Component  :       45574  Demand Per Component   : --------
   Total Component Hours: ------------ Total Component Demand: --------

   Probability/Rate   : ------E----    Type          :
   Variance           : ------E----    Units         :
   Standard Deviation : ------E----    Distribution  :

                        ---Lower---     ---Upper---  -Confidence/Coverage-
   Confidence Bounds  . ------E----     ------E----           -- %
   Tolerance Bounds   : ------E----     ------E----           -- %
         Error Factor : ------E----        Sided              -- %

-------------------------------------------------------------------------
  Component          1:
  Applications       2:
                     3:
-------------------------------------------------------------------------
                 Origin                      Record Type
  Failure Data :  PLNT      LERS-   -   -   -   -   -   -   -   -
  Exposure Data:  PLNT      TCRT-   -   -   -   -   -   -   -   -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U        Originating Facilities : HNP1-   -   -
  Nuclear Origin?  : Y        Failure Degree   :
  Bayesian Update? : N        Failure Severity : C
  IRADAP Suitable? : U        Include System?  : I  Systems : AB-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y    Subsys. train :

------------------------- REFERENCE INFORMATION -------------------------
    Document Number :  6380       Detail Reference : TABLE 17

-------------------------- ADDITIONAL COMMENTS --------------------------


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```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Run                            Data Record Number:  1

 ------------------------NUCLARR-CALCULATED-RATES-----------------------------
    Median: 4.270E-005  Upper Tolerance:  1.100E-004  Aggregation Type: 1
    Mean  : 3.586E-005  Error Factor   :  2.576E+000

 --------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures   :      1      Number of Components  : ------
    Hours Per Component  : ------------ Demand Per Component  : --------
    Total Component Hours:        27888 Total Component Demand: --------

    Probability/Rate    :  3.580E-005    Type         : MEAN
    Variance            : ------E----    Units        : F/H
    Standard Deviation  : ------E----    Distribution : GAMMA

                          ---Lower---   ---Upper---   -Confidence/Coverage-
    Confidence Bounds   :  5.090E-005    1.100E-004            90 %
    Tolerance Bounds    : ------E----   ------E----            -- %
         Error Factor   : ------E----      Sided               -- %

 -----------------------------------------------------------------------------
  Component          1: Water, Borated Internal Environment
  Applications       2:
                     3:
 -----------------------------------------------------------------------------
                 Origin                     Record Type
  Failure Data : PLNT     PMLG-CRLB-SURV-LERS-DEVR-OTHR-    -    -    -
  Exposure Data: PLNT     CRLB-SURV-  -   -   -   -   -   -    -    -

  Data Collection Period:  70 through 79 (YY through YY)

  Include Circuit? : U        Originating Facilities : BRP1-    -    -
  Nuclear Origin?  : Y        Failure Degree   :
  Bayesian Update? : N        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I  Systems : CH-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : U    Subsys. train :

 ------------------------- REFERENCE INFORMATION -----------------------------
    Document Number : 20081       Detail Reference : III-10

 -------------------------- ADDITIONAL COMMENTS ------------------------------
  FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP.

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```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

    Component: Pumps, Motor Driven
       Design: Unknown
 Normal State: Normally Standby
 Failure Mode: Fails to Run                         Data Record Number:   2

─────────────────────────NUCLARR-CALCULATED-RATES─────────────────────────
   Median:  3.564E-003   Upper Tolerance:  2.839E-002   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor    :  7.964E+000

────────────────────REFERENCE-RAW-and-PROBABILITY-DATA────────────────────
   Number of Failures    :      0        Number of Components  : ------
   Hours Per Component   : ------------  Demand Per Component  : --------
   Total Component Hours:            66  Total Component Demand: --------

   Probability/Rate   :  1.500E-005      Type         : MEAN
   Variance           :  1.960E-008      Units        : F/H
   Standard Deviation : ------E----      Distribution : DISCRETE

                        ──Lower──     ──Upper──    -Confidence/Coverage-
   Confidence Bounds  : ------E----   ------E----            -- %
   Tolerance Bounds   : ------E----   ------E----            -- %
         Error Factor : ------E----      Sided               -- %
───────────────────────────────────────────────────────────────────────────
 Component          1: Water, Borated Internal Environment
 Applications       2:
                    3:
───────────────────────────────────────────────────────────────────────────
                Origin                   Record Type
 Failure Data :  PLNT      LERS-CRLB-PMLG-PMTR-DEVR-    -    -    -    -
 Exposure Data:  PLNT      MOPR-TSTR-   -    -    -    -    -    -    -

 Data Collection Period:  73 through 79 (YY through YY)

 Include Circuit? : U        Originating Facilities : ZIS1-ZIS2-    -
 Nuclear Origin?  : Y        Failure Degree    :
 Bayesian Update? : Y        Failure Severity : C
 IRADAP Suitable? : Y        Include System?  : I  Systems : BE-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : U    Subsys. train :
────────────────────────── REFERENCE INFORMATION ──────────────────────────
   Document Number : 21381       Detail Reference : 1.5-73
─────────────────────────── ADDITIONAL COMMENTS ───────────────────────────

───────────────────────────────────────────────────────────────────────────
```

MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

Component: Pumps, Motor Driven
Design: Unknown
Normal State: Normally Standby
Failure Mode: Fails to Run
Data Record Number: 3

NUCLARR-CALCULATED-RATES

Median: 3.134E-004 Upper Tolerance: 1.023E-003 Aggregation Type: 1
Mean : 2.632E-004 Error Factor : 3.265E+000

REFERENCE-RAW-and-PROBABILITY-DATA

Number of Failures : 1 Number of Components : ------
Hours Per Component : ------------ Demand Per Component : --------
Total Component Hours: 3800 Total Component Demand: --------

Probability/Rate : 9.870E-005 Type : MEAN
Variance : 1.980E-008 Units : F/H
Standard Deviation : ------E---- Distribution : DISCRETE

	Lower	Upper	-Confidence/Coverage-
Confidence Bounds :	------E----	------E----	-- %
Tolerance Bounds :	------E----	------E----	-- %
Error Factor :	------E----	Sided	-- %

Component Applications
1: Water, High Purity/Demineralized - Int.
2:
3:

	Origin	Record Type
Failure Data :	PLNT	LERS-CRLB-PMLG-PMTR-DEVR- - - - -
Exposure Data:	PLNT	MOPR-TSTR- - - - - - - - -

Data Collection Period: 73 through 79 (YY through YY)

Include Circuit? : U Originating Facilities : ZIS1-ZIS2- -
Nuclear Origin? : Y Failure Degree :
Bayesian Update? : Y Failure Severity : C
IRADAP Suitable? : Y Include System? : I Systems : BA- - - -
Safety Grade? : Y
Primary Failure? : U Subsys. train :

REFERENCE INFORMATION

Document Number : 21381 Detail Reference : 1.5-73

ADDITIONAL COMMENTS

```
      MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Pumps, Motor Driven
      Design: Unknown
Normal State: Normally Standby
Failure Mode: Fails to Run                          Data Record Number:   4

------------------------------NUCLARR-CALCULATED-RATES--------------------------
  Median:  3.619E-003   Upper Tolerance:  2.882E-002   Aggregation Type: 1
  Mean   : +0.000E+000  Error Factor    :  7.964E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
  Number of Failures    :       0         Number of Components   : ------
  Hours Per Component   : ------------    Demand Per Component   : --------
  Total Component Hours:             65   Total Component Demand: --------

  Probability/Rate    :  1.630E-005       Type         : MEAN
  Variance            :  1.870E-008       Units        : F/H
  Standard Deviation : ------E----        Distribution : DISCRETE

                        ----Lower----    ----Upper----   -Confidence/Coverage-
  Confidence Bounds  : ------E----      ------E----              -- %
  Tolerance Bounds   : ------E----      ------E----              -- %
        Error Factor : ------E----          Sided                -- %
--------------------------------------------------------------------------------
Component            1: Water, Borated Internal Environment
Applications         2:
                     3:
--------------------------------------------------------------------------------
                  Origin                     Record Type
Failure Data :    PLNT      LERS-CRLB-PMLG-PMTR-SOCR-    -    -    -    -
Exposure Data:    PLNT      MOPR-TSTR-    -    -    -    -    -    -    -

Data Collection Period:  73 through 79 (YY through YY)

Include Circuit? : U         Originating Facilities : IPS2-    -    -
Nuclear Origin?  : Y         Failure Degree    :
Bayesian Update? : Y         Failure Severity : C
IRADAP Suitable? : Y         Include System?  : I  Systems : CI-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y     Subsys. train :
--------------------------------- REFERENCE INFORMATION ------------------------
    Document Number : 20982      Detail Reference : 1.5-60
---------------------------------- ADDITIONAL COMMENTS -------------------------

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```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Run                          Data Record Number:   5

 -----------------------------NUCLARR-CALCULATED-RATES--------------------------
    Median:  2.326E-004   Upper Tolerance:  7.593E-004   Aggregation Type: 1
    Mean  :  1.953E-004   Error Factor   :  3.265E+000

 ------------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
    Number of Failures    :       1        Number of Components   : ------
    Hours Per Component   : ------------   Demand Per Component   : --------
    Total Component Hours:          5120   Total Component Demand: --------

    Probability/Rate    :  6.540E-005      Type         : MEAN
    Variance            :  1.050E-008      Units        : F/H
    Standard Deviation : ------E----       Distribution : DISCRETE

                        ---Lower---    ---Upper---   -Confidence/Coverage-
    Confidence Bounds  : ------E----    ------E----           -- %
    Tolerance Bounds   : ------E----    ------E----           -- %
          Error Factor : ------E----       Sided              -- %

 -------------------------------------------------------------------------------
  Component          1: Water, High Purity/Demineralized - Int.
  Applications       2:
                     3:
 -------------------------------------------------------------------------------
                   Origin                   Record Type
  Failure Data :   PLNT      LERS-CRLB-PMLG-PMTR-SOCR-   -   -   -   -
  Exposure Data:   PLNT      MOPR-TSTR-   -   -   -   -   -   -   -

  Data Collection Period:  73 through 79 (YY through YY)

  Include Circuit? : U      Originating Facilities : IPS2-   -   -
  Nuclear Origin?  : Y      Failure Degree    :
  Bayesian Update? : Y      Failure Severity : C
  IRADAP Suitable? : Y      Include System?  : I  Systems : BA-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y   Subsys. train :

 ---------------------------- REFERENCE INFORMATION ----------------------------
    Document Number : 20982       Detail Reference : 1.5-61
 ----------------------------- ADDITIONAL COMMENTS -----------------------------

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```

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Pumps, Motor Driven
      Design: Unknown
Normal State: Normally Standby
Failure Mode: Fails to Run                            Data Record Number:   6

-------------------------NUCLARR-CALCULATED-RATES----------------------------
  Median:  1.563E-005  Upper Tolerance:  1.280E-004  Aggregation Type: 1
  Mean  : +0.000E+000  Error Factor   :  8.189E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
  Number of Failures   :      0        Number of Components  : ------
  Hours Per Component  : ------------  Demand Per Component  : --------
  Total Component Hours:        15050  Total Component Demand: --------

  Probability/Rate   :  9.590E-006     Type         : MEAN
  Variance           :  5.610E-010     Units        : F/H
  Standard Deviation : ------E----     Distribution : GAMMA

                     ---Lower---     ---Upper---   -Confidence/Coverage-
  Confidence Bounds  : ------E----     1.280E-004            95 %
  Tolerance Bounds   : ------E----    ------E----            -- %
       Error Factor  : ------E----       Sided               -- %
-----------------------------------------------------------------------------
Component         1: Water, Borated Internal Environment
Applications      2:
                  3:
-----------------------------------------------------------------------------
                Origin                 Record Type
Failure Data :   PLNT      UTDB-LERS-PMLG-SSLB-   -    -    -    -    -
Exposure Data:   PLNT      DCCN-PMTR-RHLG-   -    -    -    -    -    -

Data Collection Period:  71 through 84 (YY through YY)

Include Circuit? : U         Originating Facilities : MNS1-    -    -
Nuclear Origin?  : Y         Failure Degree    :
Bayesian Update? : Y         Failure Severity  : C
IRADAP Suitable? : Y         Include System?   : I  Systems : CH-  -  -  -
Safety Grade?    : Y
Primary Failure? : U     Subsys. train :

-------------------------- REFERENCE INFORMATION ----------------------------
   Document Number : 21185       Detail Reference : 3.1-7,12

--------------------------- ADDITIONAL COMMENTS -----------------------------


-----------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Run                           Data Record Number:   7

---------------------------NUCLARR-CALCULATED-RATES----------------------------
    Median:  2.314E-006   Upper Tolerance:  1.890E-005   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  8.167E+000

------------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
    Number of Failures   :      0          Number of Components  : ------
    Hours Per Component  : ------------    Demand Per Component  : --------
    Total Component Hours:       101652    Total Component Demand: --------

    Probability/Rate   :  1.580E-006       Type         : MEAN
    Variance           :  1.530E-011       Units        : F/H
    Standard Deviation : ------E----       Distribution : GAMMA

                         ----Lower----   ----Upper----   -Confidence/Coverage-
    Confidence Bounds  : ------E----      1.890E-005             95 %
    Tolerance Bounds   : ------E----     ------E----             -- %
          Error Factor : ------E----        Sided                -- %
-------------------------------------------------------------------------------
  Component          1: Unknown Internal Environment
  Applications       2:
                     3:
-------------------------------------------------------------------------------
                 Origin                     Record Type
  Failure Data :  PLNT       UTDB-LERS-PMLG-SSLB-    -    -    -    -    -
  Exposure Data:  PLNT       DCCN-PMTR-RHLG-    -    -    -    -    -    -

  Data Collection Period:  71 through 84 (YY through YY)

  Include Circuit? : U         Originating Facilities : MNS1-    -    -
  Nuclear Origin?  : Y         Failure Degree    :
  Bayesian Update? : Y         Failure Severity : C
  IRADAP Suitable? : Y         Include System?  : I  Systems : AA-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U     Subsys. train :
----------------------------- REFERENCE INFORMATION ---------------------------
     Document Number : 21185      Detail Reference : 3.1-7,13
----------------------------- ADDITIONAL COMMENTS -----------------------------

-------------------------------------------------------------------------------
```

MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

```
    Component: Pumps, Motor Driven
       Design: Unknown
 Normal State: Normally Standby
 Failure Mode: Fails to Run                            Data Record Number:   8

________________________NUCLARR-CALCULATED-RATES________________________________
  Median:  1.634E-005   Upper Tolerance:  1.301E-004   Aggregation Type: 1
  Mean  : +0.000E+000   Error Factor   :  7.964E+000

_______________________REFERENCE-RAW-and-PROBABILITY-DATA_______________________
  Number of Failures    :       0        Number of Components  : ------
  Hours Per Component   : ------------   Demand Per Component  : --------
  Total Component Hours:          14400  Total Component Demand: --------

  Probability/Rate    :  9.720E-006      Type          : MEAN
  Variance            :  5.910E-010      Units         : F/H
  Standard Deviation : ------E----       Distribution : GAMMA

                       ----Lower----   ----Upper----   -Confidence/Coverage-
  Confidence Bounds   : ------E----      6.940E-005           63 %
  Tolerance Bounds    : ------E----     ------E----           -- %
        Error Factor : ------E----         Sided              -- %
________________________________________________________________________________
 Component            1: Water, Borated Internal Environment
 Applications         2:
                      3:
________________________________________________________________________________
                Origin                     Record Type
 Failure Data :  PLNT       UTDB-LERS-INCD-MOPR-   -   -   -   -   -
 Exposure Data:  PLNT       SSLB-SURV-JOBO-    -   -   -   -   -   -

 Data Collection Period:  74 through 83 (YY through YY)

 Include Circuit? : U         Originating Facilities : HNP1-   -   -
 Nuclear Origin?  : Y         Failure Degree    :
 Bayesian Update? : Y         Failure Severity : C
 IRADAP Suitable? : Y         Include System?  : I  Systems : CI-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : U    Subsys. train :
_______________________________ REFERENCE INFORMATION __________________________
   Document Number : 20585       Detail Reference : 4.1-5,11
________________________________ ADDITIONAL COMMENTS ___________________________

________________________________________________________________________________
```

```
       MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Pumps, Motor Driven
      Design: Unknown
Normal State: Normally Standby
Failure Mode: Fails to Run                         Data Record Number:   9

-----------------------NUCLARR-CALCULATED-RATES------------------------------
  Median:  1.588E-005   Upper Tolerance:  5.184E-005   Aggregation Type: 1
  Mean  :  1.333E-005   Error Factor   :  3.265E+000

---------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
  Number of Failures   :      1          Number of Components   : ------
  Hours Per Component  : ------------    Demand Per Component   : --------
  Total Component Hours:        74997    Total Component Demand: --------

  Probability/Rate   :  1.510E-005       Type           : MEAN
  Variance           :  1.960E-010       Units          : F/H
  Standard Deviation : ------E----       Distribution : GAMMA

                       ---Lower---    ---Upper---    -Confidence/Coverage-
  Confidence Bounds  : ------E----    ------E----             -- %
  Tolerance Bounds   : ------E----    ------E----             -- %
        Error Factor : ------E----       Sided                -- %
-----------------------------------------------------------------------------
Component          1: Unknown Internal Environment
Applications       2:
                   3:
-----------------------------------------------------------------------------
                Origin                       Record Type
Failure Data :   PLNT      UTDB-LERS-INCD-MOPR-   -    -    -    -    -
Exposure Data:   PLNT      SSLB-SURV-JOBO-    -    -    -    -    -    -

Data Collection Period:  74 through 83 (YY through YY)

Include Circuit? : U         Originating Facilities : HNP1-    -    -
Nuclear Origin?  : Y         Failure Degree    :
Bayesian Update? : Y         Failure Severity : C
IRADAP Suitable? : Y         Include System?  : I  Systems : CB-  -  -  -
Safety Grade?    : N
Primary Failure? : U    Subsys. train :

---------------------------- REFERENCE INFORMATION --------------------------
  Document Number : 20585       Detail Reference : 4.1-5,12
--------------------------- ADDITIONAL COMMENTS -----------------------------


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```

```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

      Component: Pumps, Motor Driven
         Design: Unknown
   Normal State: Normally Standby
   Failure Mode: Fails to Run                          Data Record Number:  10

 -----------------------NUCLARR-CALCULATED-RATES-------------------------------
     Median:  3.994E-005   Upper Tolerance:  1.304E-004   Aggregation Type: 1
     Mean  :  3.354E-005   Error Factor   :  3.265E+000

 ----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
     Number of Failures    :       1      Number of Components  :       2
     Hours Per Component   :       14906  Demand Per Component  : --------
     Total Component Hours: ------------  Total Component Demand: --------

     Probability/Rate    : ------E----    Type         :
     Variance            : ------E----    Units        :
     Standard Deviation  : ------E----    Distribution :

                           ----Lower----  ----Upper----  -Confidence/Coverage-
     Confidence Bounds   : ------E----    ------E----             -- %
     Tolerance Bounds    : ------E----    ------E----             -- %
           Error Factor  : ------E----       Sided                -- %

 ------------------------------------------------------------------------------
   Component          1:
   Applications       2:
                      3:
 ------------------------------------------------------------------------------
                 Origin                       Record Type
   Failure Data :  PLNT      LERS-   -   -   -   -   -   -   -   -
   Exposure Data:  PLNT      TCRT-   -   -   -   -   -   -   -   -

   Data Collection Period:  72 through 78 (YY through YY)

   Include Circuit? : U         Originating Facilities : MNS2-    -    -
   Nuclear Origin?  : Y         Failure Degree     :
   Bayesian Update? : N         Failure Severity : C
   IRADAP Suitable? : U         Include System?  : I  Systems : BA-  -  -  -
   Safety Grade?    : U
   Primary Failure? : Y      Subsys. train :
 ---------------------------- REFERENCE INFORMATION ---------------------------
     Document Number :  6380        Detail Reference : TABLE 17
 ---------------------------- ADDITIONAL COMMENTS -----------------------------



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```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Run                          Data Record Number:  11

 ---------------------------NUCLARR-CALCULATED-RATES-----------------------------
    Median:  7.891E-006   Upper Tolerance:  6.284E-005   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  7.964E+000

 -----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures   :       0        Number of Components  :       2
    Hours Per Component  :        14906   Demand Per Component  : --------
    Total Component Hours: ------------   Total Component Demand: --------

    Probability/Rate   : ------E----      Type         :
    Variance           : ------E----      Units        :
    Standard Deviation : ------E----      Distribution :

                         ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds  : ------E----      ------E----              -- %
    Tolerance Bounds   : ------E----      ------E----              -- %
         Error Factor  : ------E----         Sided                 -- %
 --------------------------------------------------------------------------------
  Component         1:
  Applications      2:
                    3:
 --------------------------------------------------------------------------------
                 Origin                      Record Type
  Failure Data :  PLNT       LERS-   -   -   -   -   -   -   -   -
  Exposure Data:  PLNT       TCRT-   -   -   -   -   -   -   -   -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U         Originating Facilities : MNS2-    -    -
  Nuclear Origin?  : Y         Failure Degree    :
  Bayesian Update? : N         Failure Severity  : C
  IRADAP Suitable? : U         Include System?   : I  Systems : BE-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y     Subsys. train :
 ------------------------------ REFERENCE INFORMATION ---------------------------
    Document Number :  6380        Detail Reference : TABLE 17
 ------------------------------ ADDITIONAL COMMENTS -----------------------------


 --------------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Run                         Data Record Number:  12

  ----------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  5.261E-006  Upper Tolerance:  4.190E-005   Aggregation Type: 1
    Mean  : +0.000E+000  Error Factor   :  7.964E+000

  ------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
    Number of Failures    :       0       Number of Components   :      3
    Hours Per Component   :        14906  Demand Per Component   : --------
    Total Component Hours: ------------   Total Component Demand: --------

    Probability/Rate    : ------E----     Type         :
    Variance            : ------E----     Units        :
    Standard Deviation  : ------E----     Distribution :

                          ----Lower----   ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----     ------E----              -- %
    Tolerance Bounds    : ------E----     ------E----              -- %
          Error Factor  : ------E----        Sided                 -- %

  -------------------------------------------------------------------------
  Component          1:
  Applications       2:
                     3:
  -------------------------------------------------------------------------
                 Origin                      Record Type
  Failure Data :  PLNT       LERS-   -   -   -   -   -   -   -   -
  Exposure Data:  PLNT       TCRT-   -   -   -   -   -   -   -   -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U         Originating Facilities : MNS2-    -    -
  Nuclear Origin?  : Y         Failure Degree    :
  Bayesian Update? : N         Failure Severity : C
  IRADAP Suitable? : U         Include System?   : I  Systems : BJ-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y     Subsys. train :
  -------------------------- REFERENCE INFORMATION -------------------------
     Document Number :  6380      Detail Reference : TABLE 17
  --------------------------- ADDITIONAL COMMENTS --------------------------


  -------------------------------------------------------------------------
```

```
              MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

        Component: Pumps, Motor Driven
           Design: Unknown
     Normal State: Normally Standby
     Failure Mode: Fails to Run                          Data Record Number:  13

------------------------------NUCLARR-CALCULATED-RATES----------------------------
      Median:  7.891E-006   Upper Tolerance:  6.284E-005   Aggregation Type: 1
      Mean   : +0.000E+000  Error Factor    :  7.964E+000

---------------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
      Number of Failures     :        0       Number of Components   :      2
      Hours Per Component    :        14906   Demand Per Component   : --------
      Total Component Hours: ------------     Total Component Demand: --------

      Probability/Rate    : ------E----       Type          :
      Variance            : ------E----       Units         :
      Standard Deviation : ------E----        Distribution :

                            ---Lower---       ---Upper---     -Confidence/Coverage-
      Confidence Bounds   : ------E----       ------E----              -- %
      Tolerance Bounds    : ------E----       ------E----              -- %
            Error Factor : ------E----           Sided                 -- %

----------------------------------------------------------------------------------
    Component          1:
    Applications       2:
                       3:
----------------------------------------------------------------------------------
                     Origin                         Record Type
    Failure Data :   PLNT       LERS-  -    -    -    -    -    -    -    -
    Exposure Data:   PLNT       TCRT-  -    -    -    -    -    -    -    -

    Data Collection Period:  72 through 78 (YY through YY)

    Include Circuit? : U          Originating Facilities : MNS2-    -    -
    Nuclear Origin?  : Y          Failure Degree    :
    Bayesian Update? : N          Failure Severity : C
    IRADAP Suitable? : U          Include System?  : I   Systems : BO-   -   -   -
    Safety Grade?    : U
    Primary Failure? : Y      Subsys. train :
-------------------------------- REFERENCE INFORMATION ----------------------------
      Document Number :  6380        Detail Reference : TABLE 17
--------------------------------- ADDITIONAL COMMENTS -----------------------------


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```

```
         MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

    Component: Pumps, Motor Driven
       Design: Unknown
 Normal State: Normally Standby
 Failure Mode: Fails to Run                          Data Record Number:  14

 ────────────────────NUCLARR-CALCULATED-RATES─────────────────────────────
   Median:  3.667E-006   Upper Tolerance:  2.920E-005   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  7.964E+000

 ─────────────────REFERENCE-RAW-and-PROBABILITY-DATA───────────────────────
   Number of Failures    :      0         Number of Components  :     3
   Hours Per Component   :        21387   Demand Per Component  : --------
   Total Component Hours: ------------    Total Component Demand: --------

   Probability/Rate    : ------E----      Type         :
   Variance            : ------E----      Units        :
   Standard Deviation : ------E----       Distribution :

                         ───Lower───    ───Upper───   -Confidence/Coverage-
   Confidence Bounds   : ------E----    ------E----             -- %
   Tolerance Bounds    : ------E----    ------E----             -- %
         Error Factor : ------E----        Sided                -- %
 ──────────────────────────────────────────────────────────────────────────
 Component          1:
 Applications       2:
                    3:
 ──────────────────────────────────────────────────────────────────────────
                Origin                            Record Type
 Failure Data :  PLNT       LERS-    -    -    -    -    -    -    -    -
 Exposure Data:  PLNT       TCRT-    -    -    -    -    -    -    -    -

 Data Collection Period:  72 through 78 (YY through YY)

 Include Circuit? : U          Originating Facilities : IPS2-    -    -
 Nuclear Origin?  : Y          Failure Degree    :
 Bayesian Update? : N          Failure Severity : C
 IRADAP Suitable? : U          Include System?   : I  Systems : BJ-  -  -  -
 Safety Grade?    : U
 Primary Failure? : Y    Subsys. train :
 ──────────────────────────── REFERENCE INFORMATION ───────────────────────
   Document Number :  6380       Detail Reference : TABLE 17
 ──────────────────────────── ADDITIONAL COMMENTS ─────────────────────────

 ──────────────────────────────────────────────────────────────────────────
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Run                        Data Record Number:  15

---------------------------NUCLARR-CALCULATED-RATES----------------------------
   Median:  1.006E-005   Upper Tolerance:  8.010E-005   Aggregation Type: 1
   Mean   : +0.000E+000  Error Factor    :  7.964E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
   Number of Failures     :       0        Number of Components  :      2
   Hours Per Component    :        11694   Demand Per Component  : --------
   Total Component Hours: ------------     Total Component Demand: --------

   Probability/Rate   : ------E----        Type          :
   Variance           : ------E----        Units         :
   Standard Deviation : ------E----        Distribution  :

                         ---Lower---     ---Upper---   -Confidence/Coverage-
   Confidence Bounds  : ------E----      ------E----               -- %
   Tolerance Bounds   : ------E----      ------E----               -- %
         Error Factor : ------E----         Sided                  -- %

-------------------------------------------------------------------------------
  Component          1:
  Applications       2:
                     3:
-------------------------------------------------------------------------------
                   Origin                    Record Type
  Failure Data :   PLNT      LERS-   -   -   -   -   -   -   -   -
  Exposure Data:   PLNT      TCRT-   -   -   -   -   -   -   -   -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U       Originating Facilities : IPS3-    -    -
  Nuclear Origin?  : Y       Failure Degree    :
  Bayesian Update? : N       Failure Severity : C
  IRADAP Suitable? : U       Include System?   : I  Systems : BA-BE-  -  -
  Safety Grade?    : U
  Primary Failure? : Y    Subsys. train :

------------------------------ REFERENCE INFORMATION --------------------------
    Document Number :  6380       Detail Reference : TABLE 17
------------------------------ ADDITIONAL COMMENTS ----------------------------

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```

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MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

```
      Component: Pumps, Motor Driven
         Design: Unknown
   Normal State: Normally Standby
   Failure Mode: Fails to Run                          Data Record Number:  16

──────────────────────NUCLARR-CALCULATED-RATES──────────────────────────
   Median:  3.394E-005   Upper Tolerance:  1.108E-004   Aggregation Type: 1
   Mean  :  2.850E-005   Error Factor   :  3.265E+000

─────────────────REFERENCE-RAW-and-PROBABILITY-DATA──────────────────────
   Number of Failures    :       1       Number of Components   :     3
   Hours Per Component   :     11694     Demand Per Component   : --------
   Total Component Hours: ------------   Total Component Demand: --------

   Probability/Rate   : ------E----      Type         :
   Variance           : ------E----      Units        :
   Standard Deviation : ------E----      Distribution :

                         ───Lower───     ───Upper───    -Confidence/Coverage-
   Confidence Bounds  : ------E----      ------E----               -- %
   Tolerance Bounds   : ------E----      ------E----               -- %
        Error Factor  : ------E----         Sided                  -- %

─────────────────────────────────────────────────────────────────────────
 Component          1:
 Applications       2:
                    3:
─────────────────────────────────────────────────────────────────────────
                Origin                      Record Type
 Failure Data :  PLNT       LERS-   -   -   -   -   -   -   -   -
 Exposure Data:  PLNT       TCRT-   -   -   -   -   -   -   -   -

 Data Collection Period:  72 through 78 (YY through YY)

 Include Circuit? : U          Originating Facilities : IPS3-    -    -
 Nuclear Origin?  : Y          Failure Degree    :
 Bayesian Update? : N          Failure Severity  : C
 IRADAP Suitable? : U          Include System?   : I   Systems : BJ-  -  -  -
 Safety Grade?    : U
 Primary Failure? : Y      Subsys. train :

──────────────────────── REFERENCE INFORMATION ──────────────────────────
   Document Number :  6380        Detail Reference : TABLE 17
──────────────────────── ADDITIONAL COMMENTS ────────────────────────────

─────────────────────────────────────────────────────────────────────────
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Run                         Data Record Number:  17

 ----------------------------NUCLARR-CALCULATED-RATES----------------------------
    Median:  1.006E-005   Upper Tolerance:  8.010E-005   Aggregation Type: 1
    Mean   : +0.000E+000   Error Factor    :  7.964E+000

 -------------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures    :       0      Number of Components   :      2
    Hours Per Component   :       11694  Demand Per Component   : --------
    Total Component Hours: ------------  Total Component Demand: --------

    Probability/Rate     : ------E----   Type          :
    Variance             : ------E----   Units         :
    Standard Deviation : ------E----     Distribution :

                          ---Lower---    ---Upper---    -Confidence/Coverage-
    Confidence Bounds    : ------E----   ------E----              -- %
    Tolerance Bounds     : ------E----   ------E----              -- %
          Error Factor : ------E----        Sided                 -- %

 ---------------------------------------------------------------------------------
  Component          1:
  Applications       2:
                     3:
 ---------------------------------------------------------------------------------
                   Origin                      Record Type
  Failure Data :   PLNT        LERS-   -   -   -   -   -   -   -   -
  Exposure Data:   PLNT        TCRT-   -   -   -   -   -   -   -   -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U        Originating Facilities : IPS3-    -    -
  Nuclear Origin?  : Y        Failure Degree     :
  Bayesian Update? : N        Failure Severity : C
  IRADAP Suitable? : U        Include System?  : I  Systems : BO-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y    Subsys. train :
 ------------------------------- REFERENCE INFORMATION ---------------------------
    Document Number :  6380       Detail Reference : TABLE 17
 -------------------------------- ADDITIONAL COMMENTS -----------------------------


 ---------------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Run                         Data Record Number:  18

------------------------------NUCLARR-CALCULATED-RATES-------------------------------
    Median:  2.581E-006   Upper Tolerance:  2.055E-005   Aggregation Type: 1
    Mean   : +0.000E+000   Error Factor    :  7.964E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------------
    Number of Failures    :       0        Number of Components  :      2
    Hours Per Component   :        45574   Demand Per Component  : --------
    Total Component Hours: ------------    Total Component Demand: --------

    Probability/Rate    : ------E----      Type          :
    Variance            : ------E----      Units         :
    Standard Deviation : ------E----       Distribution :

                          ---Lower----     ---Upper----   -Confidenca/Coverage-
    Confidence Bounds   : ------E----      ------E----             -- %
    Tolerance Bounds    : ------E----      ------E----             -- %
          Error Factor : ------E----         Sided                 -- %

-------------------------------------------------------------------------------------
  Component           1:
  Applications        2:
                      3:
-------------------------------------------------------------------------------------
                   Origin                          Record Type
  Failure Data :   PLNT       LERS-   -   -   -   -   -   -   -   -
  Exposure Data:   PLNT       TCRT-   -   -   -   -   -   -   -   -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U          Originating Facilities : HNP1-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : U          Include System?   : I  Systems : BO-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y     Subsys. train :

------------------------------ REFERENCE INFORMATION --------------------------------
     Document Number :  6380       Detail Reference : TABLE 17
------------------------------- ADDITIONAL COMMENTS ---------------------------------


-------------------------------------------------------------------------------------
```

```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Run                          Data Record Number:  19

-----------------------------NUCLARR-CALCULATED-RATES-----------------------------
    Median:  1.306E-005  Upper Tolerance:  4.265E-005  Aggregation Type: 1
    Mean  :  1.097E-005  Error Factor   :  3.265E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
    Number of Failures    :      1          Number of Components   :      2
    Hours Per Component   :        45574    Demand Per Component   : --------
    Total Component Hours: ------------     Total Component Demand: --------

    Probability/Rate     : ------E----      Type         :
    Variance             : ------E----      Units        :
    Standard Deviation   : ------E----      Distribution :

                           ----Lower----     ----Upper----   -Confidence/Coverage-
    Confidence Bounds    : ------E----      ------E----              -- %
    Tolerance Bounds     : ------E----      ------E----              -- %
          Error Factor   : ------E----         Sided                 -- %
-----------------------------------------------------------------------------------
  Component          1:
  Applications       2:
                     3:
-----------------------------------------------------------------------------------
                   Origin                       Record Type
  Failure Data :   PLNT       LERS-    -    -    -    -    -    -    -    -
  Exposure Data:   PLNT       TCRT-    -    -    -    -    -    -    -    -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U      Originating Facilities : HNP1-    -    -
  Nuclear Origin?  : Y      Failure Degree     :
  Bayesian Update? : N      Failure Severity : C
  IRADAP Suitable? : U      Include System?  : I  Systems : BJ-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y    Subsys. train :

------------------------------ REFERENCE INFORMATION ------------------------------
     Document Number :  6380        Detail Reference : TABLE 17

------------------------------- ADDITIONAL COMMENTS -------------------------------

-----------------------------------------------------------------------------------
```

```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

      Component: Pumps, Motor Driven
         Design: Unknown
   Normal State: Normally Standby
   Failure Mode: Fails to Run                          Data Record Number:  25

 ---------------------------NUCLARR-CALCULATED-RATES-------------------------------
     Median:  2.784E-005   Upper Tolerance:  9.089E-005   Aggregation Type: 1
     Mean  :  2.338E-005   Error Factor   :  3.265E+000

 ------------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------------
     Number of Failures     :       1          Number of Components  :      2
     Hours Per Component    :         21387    Demand Per Component  : --------
     Total Component Hours: ------------       Total Component Demand: --------

     Probability/Rate    : ------E----         Type          :
     Variance            : ------E----         Units         :
     Standard Deviation : ------E----          Distribution :

                           ----Lower----      ----Upper----   -Confidence/Coverage-
     Confidence Bounds   : ------E----        ------E----               -- %
     Tolerance Bounds    : ------E----        ------E----               -- %
           Error Factor : ------E----            Sided                  -- %

 ----------------------------------------------------------------------------------
   Component          1:
   Applications       2:
                      3:
 ----------------------------------------------------------------------------------
                  Origin                         Record Type
   Failure Data :  PLNT      LERS-   -   -   -   -   -   -   -   -
   Exposure Data:  PLNT      TCRT-   -   -   -   -   -   -   -   -

   Data Collection Period:  72 through 78 (YY through YY)

   Include Circuit? : U         Originating Facilities : IPS2-    -    -
   Nuclear Origin?  : Y         Failure Degree    :
   Bayesian Update? : N         Failure Severity : C
   IRADAP Suitable? : U         Include System?  : I  Systems : BA-  -  -  -
   Safety Grade?    : U
   Primary Failure? : Y    Subsys. train :

 ------------------------------ REFERENCE INFORMATION ------------------------------
     Document Number :  6380       Detail Reference : TABLE 17

 ------------------------------ ADDITIONAL COMMENTS --------------------------------


 ----------------------------------------------------------------------------------
```

MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

```
   Component: Pumps, Motor Driven
      Design: Unknown
Normal State: Normally Alternating
Failure Mode: Fails to Start                              Data Record Number:   1

------------------------------NUCLARR-CALCULATED-RATES------------------------------
  Median:  2.067E-003   Upper Tolerance:  8.290E-003   Aggregation Type: 1
  Mean  :  1.748E-003   Error Factor    :  4.010E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
  Number of Failures    :     1         Number of Components  : ------
  Hours Per Component   : ------------  Demand Per Component  : --------
  Total Component Hours: ------------   Total Component Demand:      572

  Probability/Rate    :  1.740E-003     Type         : MEAN
  Variance            : ------E----     Units        : F/D
  Standard Deviation : ------E----      Distribution : POISSON

                       ---Lower---     ---Upper---   -Confidence/Coverage-
  Confidence Bounds  :  8.960E-005      8.290E-003            90 %
  Tolerance Bounds   : ------E----     ------E----            -- %
       Error Factor : ------E----         Sided               -- %

------------------------------------------------------------------------------------
Component          1: Water, Borated Internal Environment
Applications       2:
                   3:
------------------------------------------------------------------------------------
                Origin                     Record Type
Failure Data :   PLNT     PMLG-CRLB-SURV-LERS-DEVR-OTHR-    -    -    -
Exposure Data:   PLNT     CRLB-SURV-   -    -    -    -    -    -    -    -

Data Collection Period:  70 through 79 (YY through YY)

Include Circuit? : U        Originating Facilities : BRP1-    -    -
Nuclear Origin?  : Y        Failure Degree    :
Bayesian Update? : N        Failure Severity : C
IRADAP Suitable? : Y        Include System?  : I   Systems : DA-  -  -  -
Safety Grade?    : N
Primary Failure? : U     Subsys. train :

----------------------------- REFERENCE INFORMATION --------------------------------
   Document Number : 20081        Detail Reference : III-10

------------------------------ ADDITIONAL COMMENTS ---------------------------------
FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP.

------------------------------------------------------------------------------------
```

```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Pumps, Motor Driven
         Design: Unknown
   Normal State: Normally Alternating
   Failure Mode: Fails to Start                            Data Record Number:   2

---------------------------NUCLARR-CALCULATED-RATES---------------------------
     Median:  1.864E-003   Upper Tolerance:  2.320E-003   Aggregation Type: 1
     Mean  : +0.000E+000   Error Factor   :  1.245E+000

------------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
     Number of Failures   :       0          Number of Components  : ------
     Hours Per Component  : ------------     Demand Per Component  : --------
     Total Component Hours: ------------     Total Component Demand:      827

     Probability/Rate   :  7.890E-004        Type         : MEAN
     Variance           :  3.510E-007        Units        : F/D
     Standard Deviation : ------E----        Distribution : BETA

                         ---Lower---    ---Upper---   -Confidence/Coverage-
     Confidence Bounds  : ------E----    2.320E-003            95 %
     Tolerance Bounds   : ------E----   ------E----            -- %
           Error Factor : ------E----       Sided              -- %

-------------------------------------------------------------------------------
   Component          1: Water, High Purity/Demineralized - Int.
   Applications       2:
                      3:
-------------------------------------------------------------------------------
                  Origin                         Record Type
   Failure Data :  PLNT      UTDB-LERS-PMLG-SSLB-   -    -    -    -    -
   Exposure Data:  PLNT      DCCN-PMTR-RHLG-   -    -    -    -    -    -

   Data Collection Period:  71 through 84 (YY through YY)

   Include Circuit? : U         Originating Facilities : MNS1-    -    -
   Nuclear Origin?  : Y         Failure Degree   :
   Bayesian Update? : Y         Failure Severity : C
   IRADAP Suitable? : Y         Include System?  : I  Systems : CC-  -  -  -
   Safety Grade?    : N
   Primary Failure? : U    Subsys. train :
----------------------------- REFERENCE INFORMATION ---------------------------
      Document Number : 21185        Detail Reference : 3.1-5,12
------------------------------ ADDITIONAL COMMENTS ----------------------------


-------------------------------------------------------------------------------
```

```
         MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Alternating
  Failure Mode: Fails to Start                        Data Record Number:   3

---------------------------NUCLARR-CALCULATED-RATES----------------------------
   Median: 3.549E-002  Upper Tolerance: 5.840E-002  Aggregation Type: 1
   Mean  : 3.488E-002  Error Factor   : 1.645E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
   Number of Failures   :      9        Number of Components  : ------
   Hours Per Component  : ------------  Demand Per Component  : --------
   Total Component Hours: ------------  Total Component Demand:      258

   Probability/Rate   :  6.410E-003     Type         : MEAN
   Variance           :  3.790E-006     Units        : F/D
   Standard Deviation : ------E----     Distribution : BETA

                        ----Lower----   ----Upper----  -Confidence/Coverage-
   Confidence Bounds  : ------E----      5.840E-002          95 %
   Tolerance Bounds   : ------E----     ------E----          -- %
        Error Factor  : ------E----        Sided             -- %

-------------------------------------------------------------------------------
  Component            1: Water, High Purity/Demineralized - Int.
  Applications         2:
                       3:
-------------------------------------------------------------------------------
                 Origin                 Record Type
  Failure Data :  PLNT      UTDB-LERS-PMLG-SSLB-   -    -    -    -    -
  Exposure Data:  PLNT      DCCN-PMTR-RHLG-   -    -    -    -    -    -

  Data Collection Period:  71 through 84 (YY through YY)

  Include Circuit? : U      Originating Facilities : MNS1-    -    -
  Nuclear Origin?  : Y      Failure Degree     :
  Bayesian Update? : Y      Failure Severity : C
  IRADAP Suitable? : Y      Include System?  : I  Systems : BI-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U    Subsys. train :
--------------------------- REFERENCE INFORMATION ------------------------------
    Document Number : 21185      Detail Reference : 3.1-5,12
---------------------------- ADDITIONAL COMMENTS -------------------------------

-------------------------------------------------------------------------------
```

```
              MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Alternating
  Failure Mode: Fails to Start                          Data Record Number:   4

 ----------------------------NUCLARR-CALCULATED-RATES----------------------------
    Median:  3.071E-003   Upper Tolerance:  3.830E-003   Aggregation Type: 1
    Mean   : +0.000E+000   Error Factor    :  1.247E+000

 -----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures    :      0          Number of Components  : ------
    Hours Per Component   : ------------    Demand Per Component  : --------
    Total Component Hours: ------------    Total Component Demand:      501

    Probability/Rate   :  9.240E-004        Type          : MEAN
    Variance           :  4.800E-007        Units         : F/D
    Standard Deviation : ------E----        Distribution : BETA

                         ---Lower---    ---Upper---    -Confidence/Coverage-
    Confidence Bounds  : ------E----     3.830E-003              95 %
    Tolerance Bounds   : ------E----    ------E----              -- %
          Error Factor : ------E----        Sided                -- %

 --------------------------------------------------------------------------------
  Component            1: Water, High Purity/Demineralized - Int.
  Applications         2:
                       3:
 --------------------------------------------------------------------------------
                  Origin                       Record Type
  Failure Data :   PLNT       UTDB-LERS-PMLG-SSLB-   -    -    -    -    -
  Exposure Data:   PLNT       DCCN-PNTR-RHLG-    -    -    -    -    -    -

  Data Collection Period:  71 through 84 (YY through YY)

  Include Circuit? : U        Originating Facilities : MNS1-    -    -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : Y        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I  Systems : CC-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U    Subsys. train :

 ---------------------------- REFERENCE INFORMATION ------------------------------
    Document Number : 21185       Detail Reference : 3.1-5,12

 ----------------------------- ADDITIONAL COMMENTS ------------------------------


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```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Pumps, Motor Driven
         Design: Unknown
   Normal State: Normally Alternating
   Failure Mode: Fails to Start                       Data Record Number:   5

------------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  1.119E-002  Upper Tolerance:  1.400E-002  Aggregation Type: 1
    Mean   : +0.000E+000 Error Factor    :  1.251E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures    :      0        Number of Components  : ------
    Hours Per Component   : ------------  Demand Per Component  : --------
    Total Component Hours: ------------  Total Component Demand:      136

    Probability/Rate    :  1.140E-003     Type          : MEAN
    Variance            :  7.330E-007     Units         : F/D
    Standard Deviation : ------E----      Distribution : BETA

                           ----Lower----   ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----      7.350E-003              63 %
    Tolerance Bounds    : ------E----      ------E----             -- %
          Error Factor  : ------E----         Sided                -- %

---------------------------------------------------------------------------------
   Component           1: Water, High Purity/Demineralized - Int.
   Applications        2:
                       3:
---------------------------------------------------------------------------------
                  Origin                    Record Type
   Failure Data :  PLNT      UTDB-LERS-INCD-MOPR-    -    -    -    -    -
   Exposure Data:  PLNT      SSLB-SURV-JOBO-PMMR-    -    -    -    -    -

   Data Collection Period:  74 through 83 (YY through YY)

   Include Circuit? : U         Originating Facilities : HNP1-    -    -
   Nuclear Origin?  : Y         Failure Degree    :
   Bayesian Update? : Y         Failure Severity : C
   IRADAP Suitable? : Y         Include System?  : I  Systems : CC-  -  -  -
   Safety Grade?    : N
   Primary Failure? : U    Subsys. train :

---------------------------------- REFERENCE INFORMATION -------------------------
     Document Number : 20585       Detail Reference : 4.1-5,11
---------------------------------- ADDITIONAL COMMENTS ---------------------------

---------------------------------------------------------------------------------
```

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Pumps, Motor Driven
      Design: Unknown
Normal State: Normally Alternating
Failure Mode: Fails to Start                          Data Record Number:   6

─────────────────────────NUCLARR─CALCULATED─RATES─────────────────────────────
  Median:  2.194E-003  Upper Tolerance:  7.226E-003  Aggregation Type: 1
  Mean  :  1.855E-003  Error Factor   :  3.294E+000

────────────────────REFERENCE─RAW─and─PROBABILITY─DATA────────────────────────
  Number of Failures   :       1         Number of Components  : ------
  Hours Per Component  : ------------    Demand Per Component  : --------
  Total Component Hours: ------------    Total Component Demand:      539

  Probability/Rate   :  1.420E-003       Type         : MEAN
  Variance           :  7.220E-007       Units        : F/D
  Standard Deviation : ------E----       Distribution : BETA

                        ───Lower───    ───Upper───   -Confidence/Coverage-
  Confidence Bounds  : ------E----     ------E----              -- %
  Tolerance Bounds   : ------E----     ------E----              -- %
       Error Factor  : ------E----        Sided                 -- %

──────────────────────────────────────────────────────────────────────────────
Component          1: Water, High Purity/Demineralized - Int.
Applications       2:
                   3:
──────────────────────────────────────────────────────────────────────────────
                Origin                  Record Type
Failure Data :   PLNT       UTDB-LERS-INCD-MOPR-   -    -    -    -    -
Exposure Data:   PLNT       SSLB-SURV-JOBO-PMWR-   -    -    -    -    -

Data Collection Period:  74 through 83 (YY through YY)

Include Circuit? : U        Originating Facilities : HNP1-   -   -
Nuclear Origin?  : Y        Failure Degree    :
Bayesian Update? : Y        Failure Severity : C
IRADAP Suitable? : Y        Include System?  : I  Systems : CC-  -  -  -
Safety Grade?    : N
Primary Failure? : U    Subsys. train :
──────────────────── REFERENCE INFORMATION ────────────────────────────────────
   Document Number : 20585      Detail Reference : 4.1-5,12
───────────────────── ADDITIONAL COMMENTS ─────────────────────────────────────


──────────────────────────────────────────────────────────────────────────────
```

```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

      Component: Pumps, Motor Driven
         Design: Unknown
   Normal State: Normally Alternating
   Failure Mode: Fails to Start                          Data Record Number:   7

 ----------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  1.626E-002   Upper Tolerance:  2.039E-002   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor    :  1.254E+000

 ------------------------REFERENCE-RAM-and-PROBABILITY-DATA---------------------
    Number of Failures   :      0         Number of Components  :      3
    Hours Per Component  : ------------   Demand Per Component  :     31
    Total Component Hours: ------------   Total Component Demand: --------

    Probability/Rate   : ------E----      Type         :
    Variance           : ------E----      Units        :
    Standard Deviation : ------E----      Distribution :

                         ---Lower---     ---Upper---    -Confidence/Coverage-
    Confidence Bounds  : ------E----     ------E----            -- %
    Tolerance Bounds   : ------E----     ------E----            -- %
         Error Factor  : ------E----       Sided                -- %

 -------------------------------------------------------------------------------
   Component         1:
   Applications      2:
                     3:
 -------------------------------------------------------------------------------
                  Origin                      Record Type
   Failure Data :  PLNT      LERS-   -   -   -   -   -   -   -   -
   Exposure Data:  PLNT      EXPJ-   -   -   -   -   -   -   -   -

   Data Collection Period:  72 through 78 (YY through YY)

   Include Circuit? : U        Originating Facilities : MNS2-    -    -
   Nuclear Origin?  : Y        Failure Degree   :
   Bayesian Update? : N        Failure Severity : C
   IRADAP Suitable? : U        Include System?  : I  Systems : CC-  -  -  -
   Safety Grade?    : U
   Primary Failure? : Y     Subsys. train :

 ----------------------------- REFERENCE INFORMATION --------------------------
     Document Number :  6380       Detail Reference : TABLE 17

 ------------------------------ ADDITIONAL COMMENTS ----------------------------


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```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Alternating
  Failure Mode: Fails to Start                          Data Record Number:   8

 ---------------------------NUCLARR-CALCULATED-RATES----------------------------
    Median:  1.626E-002   Upper Tolerance:  2.039E-002   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor    :  1.254E+000

 ------------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
    Number of Failures    :       0         Number of Components  :      3
    Hours Per Component   : ------------    Demand Per Component  :     31
    Total Component Hours: ------------     Total Component Demand: --------

    Probability/Rate    : ------E----       Type          :
    Variance            : ------E----       Units         :
    Standard Deviation : ------E----        Distribution :

                          ----Lower----    ----Upper----    -Confidence/Coverage-
    Confidence Bounds   : ------E----       ------E----               -- %
    Tolerance Bounds    : ------E----       ------E----               -- %
          Error Factor : ------E----          Sided                   -- %

 -------------------------------------------------------------------------------
  Component          1:
  Applications       2:
                     3:
 -------------------------------------------------------------------------------
                 Origin                            Record Type
  Failure Data :  PLNT       LERS-  -   -   -   -   -   -   -   -
  Exposure Data:  PLNT       EXPJ-  -   -   -   -   -   -   -   -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U          Originating Facilities : MNS2-    -    -
  Nuclear Origin?  : Y          Failure Degree     :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : U          Include System?  : I  Systems : CB-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y     Subsys. train :

 ----------------------------- REFERENCE INFORMATION ---------------------------
     Document Number :  6380       Detail Reference : TABLE 17
 ------------------------------ ADDITIONAL COMMENTS ----------------------------


 -------------------------------------------------------------------------------
```

MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

```
     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Alternating
  Failure Mode: Fails to Start                          Data Record Number:   9

----------------------------NUCLARR-CALCULATED-RATES------------------------------
    Median:  2.413E-002  Upper Tolerance:  3.039E-002   Aggregation Type: 1
    Mean   : +0.000E+000  Error Factor   :  1.260E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------------
    Number of Failures    :      0         Number of Components  :      2
    Hours Per Component   : ------------   Demand Per Component  :     31
    Total Component Hours: ------------    Total Component Demand: --------

    Probability/Rate    : ------E----      Type          :
    Variance            : ------E----      Units         :
    Standard Deviation  : ------E----      Distribution  :

                          ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----              -- %
    Tolerance Bounds    : ------E----      ------E----              -- %
          Error Factor  : ------E----         Sided                 -- %

-----------------------------------------------------------------------------------
  Component          1:
  Applications       2:
                     3:
-----------------------------------------------------------------------------------
                  Origin                     Record Type
  Failure Data :  PLNT      LERS-   -   -   -   -   -   -   -   -
  Exposure Data:  PLNT      EXPJ-   -   -   -   -   -   -   -   -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U        Originating Facilities : MNS2-    -    -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : N        Failure Severity : C
  IRADAP Suitable? : U        Include System?  : I  Systems : CA-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y    Subsys. train :

-------------------------------- REFERENCE INFORMATION ----------------------------
    Document Number :  6380        Detail Reference : TABLE 17
-------------------------------- ADDITIONAL COMMENTS ------------------------------

-----------------------------------------------------------------------------------
```

```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/33/09

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Alternating
  Failure Mode: Fails to Start                       Data Record Number:  10

 ────────────────────────────NUCLARR-CALCULATED-RATES────────────────────────────
   Median:  1.226E-002  Upper Tolerance:  1.534E-002  Aggregation Type: 1
   Mean  : +0.000E+000  Error Factor   :  1.252E+000

 ─────────────────────────REFERENCE-RAW-and-PROBABILITY-DATA──────────────────────
   Number of Failures   :       0         Number of Components  :      4
   Hours Per Component  : ------------    Demand Per Component  :     31
   Total Component Hours: ------------    Total Component Demand: --------

   Probability/Rate   : ------E----       Type         :
   Variance           : ------E----       Units        :
   Standard Deviation : ------E----       Distribution :

                        ────Lower────   ────Upper────   -Confidence/Coverage-
   Confidence Bounds  : ------E----     ------E----             -- %
   Tolerance Bounds   : ------E----     ------E----             -- %
         Error Factor : ------E----         Sided                -- %
 ─────────────────────────────────────────────────────────────────────────────────
 Component          1:
 Applications       2:
                    3:
 ─────────────────────────────────────────────────────────────────────────────────
                 Origin                          Record Type
 Failure Data :   PLNT       LERS-   -    -    -    -    -    -    -    -
 Exposure Data:   PLNT       EXPJ-   -    -    -    -    -    -    -    -

 Data Collection Period:  72 through 78 (YY through YY)

 Include Circuit? : U         Originating Facilities : MNS2-    -    -
 Nuclear Origin?  : Y         Failure Degree   :
 Bayesian Update? : N         Failure Severity : C
 IRADAP Suitable? : U         Include System?  : I  Systems : BS-  -  -  -
 Safety Grade?    : U
 Primary Failure? : Y    Subsys. train :
 ─────────────────────────── REFERENCE INFORMATION ───────────────────────────────
   Document Number :  6380       Detail Reference : TABLE 17
 ──────────────────────────── ADDITIONAL COMMENTS ────────────────────────────────

 ─────────────────────────────────────────────────────────────────────────────────
```

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```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Alternating
  Failure Mode: Fails to Start                        Data Record Number:  11

 ---------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  2.413E-002  Upper Tolerance:  3.039E-002  Aggregation Type: 1
    Mean  : +0.000E+000  Error Factor   :  1.260E+000

 ----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures   :      0         Number of Components  :      2
    Hours Per Component  : ------------   Demand Per Component  :     31
    Total Component Hours: ------------   Total Component Demand: --------

    Probability/Rate    : ------E----     Type         :
    Variance            : ------E----     Units        :
    Standard Deviation  : ------E----     Distribution :

                          ---Lower---     ---Upper---   -Confidence/Coverage-
    Confidence Bounds   : ------E----     ------E----             -- %
    Tolerance Bounds    : ------E----     ------E----             -- %
          Error Factor  : ------E----        Sided                -- %

 ------------------------------------------------------------------------------
  Component          1:
  Applications       2:
                     3:
 ------------------------------------------------------------------------------
                 Origin                        Record Type
  Failure Data :  PLNT      LERS-   -   -   -   -   -   -   -   -
  Exposure Data:  PLNT      EXPJ-   -   -   -   -   -   -   -   -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U        Originating Facilities : MNS2-    -    -
  Nuclear Origin?  : Y        Failure Degree     :
  Bayesian Update? : N        Failure Severity : C
  IRADAP Suitable? : U        Include System?  : I  Systems : BA-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y     Subsys. train :

 ---------------------------- REFERENCE INFORMATION ---------------------------
    Document Number :  6300      Detail Reference : TABLE 17

 ---------------------------- ADDITIONAL COMMENTS -----------------------------


 ------------------------------------------------------------------------------
```

```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

      Component: Pumps, Motor Driven
         Design: Unknown
   Normal State: Normally Alternating
   Failure Mode: Fails to Start                           Data Record Number:  12

  ---------------------------NUCLARR-CALCULATED-RATES---------------------------
     Median:  8.630E-003   Upper Tolerance:  1.078E-002   Aggregation Type: 1
     Mean   : +0.000E+000   Error Factor    :  1.249E+000

  ----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
     Number of Failures     :       0        Number of Components   :      3
     Hours Per Component    : ------------   Demand Per Component   :      59
     Total Component Hours: ------------     Total Component Demand: --------

     Probability/Rate     : ------E----      Type          :
     Variance             : ------E----      Units         :
     Standard Deviation : ------E----        Distribution :

                             ----Lower----    ----Upper----   -Confidence/Coverage-
     Confidence Bounds    : ------E----      ------E----                 -- %
     Tolerance Bounds     : ------E----      ------E----                 -- %
           Error Factor : ------E----          Sided                     -- %

  ------------------------------------------------------------------------------
   Component           1:
   Applications        2:
                       3:
  ------------------------------------------------------------------------------
                  Origin                       Record Type
   Failure Data :   PLNT       LERS-   -   -   -   -   -   -   -   -
   Exposure Data:   PLNT       EXPJ-   -   -   -   -   -   -   -   -

   Data Collection Period:  72 through 78 (YY through YY)

   Include Circuit? : U        Originating Facilities : IPS2-    -    -
   Nuclear Origin?  : Y        Failure Degree    :
   Bayesian Update? : N        Failure Severity : C
   IRADAP Suitable? : U        Include System?  : I   Systems : CC-  -  -  -
   Safety Grade?    : U
   Primary Failure? : Y    Subsys. train :

  --------------------------- REFERENCE INFORMATION ----------------------------
      Document Number :  6380       Detail Reference : TABLE 17

  ---------------------------- ADDITIONAL COMMENTS -----------------------------


  ------------------------------------------------------------------------------
```

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

      Component: Pumps, Motor Driven
         Design: Unknown
   Normal State: Normally Alternating
   Failure Mode: Fails to Start                      Data Record Number:  13

 ──────────────────────NUCLARR-CALCULATED-RATES──────────────────────────
     Median:  1.287E-002   Upper Tolerance:  1.611E-002   Aggregation Type: 1
     Mean   : +0.000E+000  Error Factor    :  1.251E+000

 ──────────────────REFERENCE-RAW-and-PROBABILITY-DATA────────────────────
     Number of Failures    :      0         Number of Components   :     2
     Hours Per Component   : ------------   Demand Per Component   :    59
     Total Component Hours: ------------   Total Component Demand: --------

     Probability/Rate    : ------E----     Type         :
     Variance            : ------E----     Units        :
     Standard Deviation : ------E----     Distribution :

                         ───Lower───    ───Upper───   -Confidence/Coverage-
     Confidence Bounds   : ------E----   ------E----            -- %
     Tolerance Bounds    : ------E----   ------E----            -- %
           Error Factor  : ------E----      Sided               -- %
 ─────────────────────────────────────────────────────────────────────────
   Component          1:
   Applications       2:
                      3:
 ─────────────────────────────────────────────────────────────────────────
                    Origin                      Record Type
   Failure Data :   PLNT      LERS-   -   -   -   -   -   -   -   -
   Exposure Data:   PLNT      EXPJ-   -   -   -   -   -   -   -   -

   Data Collection Period:  72 through 78 (YY through YY)

   Include Circuit? : U         Originating Facilities : IPS2-   -   -
   Nuclear Origin?  : Y         Failure Degree     :
   Bayesian Update? : N         Failure Severity : C
   IRADAP Suitable? : U         Include System?  : I  Systems : CB-  -  -  -
   Safety Grade?    : U
   Primary Failure? : Y     Subsys. train :
 ──────────────────────── REFERENCE INFORMATION ─────────────────────────
     Document Number :  6380       Detail Reference : TABLE 17
 ──────────────────────── ADDITIONAL COMMENTS ───────────────────────────

 ─────────────────────────────────────────────────────────────────────────
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

   Component: Pumps, Motor Driven
      Design: Unknown
Normal State: Normally Alternating
Failure Mode: Fails to Start                          Data Record Number:  14

------------------------------NUCLARR-CALCULATED-RATES-----------------------------
   Median:  1.287E-002  Upper Tolerance:  1.611E-002   Aggregation Type: 1
   Mean   : +0.000E+000  Error Factor    :  1.251E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------------
   Number of Failures    :       0         Number of Components  :       2
   Hours Per Component   : ------------    Demand Per Component  :      59
   Total Component Hours: ------------    Total Component Demand: --------

   Probability/Rate    : ------E----       Type         :
   Variance            : ------E----       Units        :
   Standard Deviation : ------E----       Distribution :

                         ----Lower----   ----Upper----  -Confidence/Coverage-
   Confidence Bounds   : ------E----     ------E----              -- %
   Tolerance Bounds    : ------E----     ------E----              -- %
         Error Factor : ------E----        Sided                  -- %

-----------------------------------------------------------------------------------
Component           1:
Applications        2:
                    3:
-----------------------------------------------------------------------------------
                 Origin                         Record Type
Failure Data :   PLNT       LERS-   -   -   -   -   -   -   -   -
Exposure Data:   PLNT       EXPJ-   -   -   -   -   -   -   -   -

Data Collection Period:  72 through 78 (YY through YY)

Include Circuit? : U        Originating Facilities : IPS2-   -   -
Nuclear Origin?  : Y        Failure Degree    :
Bayesian Update? : N        Failure Severity : C
IRADAP Suitable? : U        Include System?  : I  Systems : CA-  -  -  -
Safety Grade?    : U
Primary Failure? : Y    Subsys. train :

------------------------------ REFERENCE INFORMATION ------------------------------
  Document Number :  6380      Detail Reference : TABLE 17

------------------------------- ADDITIONAL COMMENTS -------------------------------

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```

MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

```
     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Alternating
  Failure Mode: Fails to Start                       Data Record Number:  15

---------------------------NUCLARR-CALCULATED-RATES--------------------------
   Median:  4.340E-003  Upper Tolerance:  5.409E-003  Aggregation Type: 1
   Mean  : +0.000E+000  Error Factor    :  1.246E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
   Number of Failures   :       0        Number of Components  :      6
   Hours Per Component  : ------------   Demand Per Component  :     59
   Total Component Hours: ------------   Total Component Demand: --------

   Probability/Rate    : ------E----     Type          :
   Variance            : ------E----     Units         :
   Standard Deviation  : ------E----     Distribution  :

                         ---Lower---     ---Upper---   -Confidence/Coverage-
   Confidence Bounds   : ------E----     ------E----              -- %
   Tolerance Bounds    : ------E----     ------E----              -- %
         Error Factor  : ------E----        Sided                 -- %

-----------------------------------------------------------------------------
 Component          1:
 Applications       2:
                    3:
-----------------------------------------------------------------------------
                Origin                       Record Type
 Failure Data :  PLNT      LERS-   -   -   -   -   -   -   -   -
 Exposure Data:  PLNT      EXPJ-   -   -   -   -   -   -   -   -

 Data Collection Period:  72 through 78 (YY through YY)

 Include Circuit? : U        Originating Facilities : IPS2-   -   -
 Nuclear Origin?  : Y        Failure Degree    :
 Bayesian Update? : N        Failure Severity  : C
 IRADAP Suitable? : U        Include System?   : I  Systems : BS-  -  -  -
 Safety Grade?    : U
 Primary Failure? : Y     Subsys. train :

------------------------------ REFERENCE INFORMATION ------------------------
   Document Number :  6380       Detail Reference : TABLE 17
------------------------------ ADDITIONAL COMMENTS --------------------------


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```
              MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Alternating
  Failure Mode: Fails to Start                          Data Record Number:  16

 ---------------------------NUCLARR-CALCULATED-RATES-------------------------------
   Median:  2.005E-002   Upper Tolerance:  2.520E-002   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  1.257E+000

 ----------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------------
   Number of Failures   :       0          Number of Components  :       3
   Hours Per Component  : ------------     Demand Per Component  :       25
   Total Component Hours: ------------     Total Component Demand: --------

   Probability/Rate   : ------E----        Type         :
   Variance           : ------E----        Units        :
   Standard Deviation : ------E----        Distribution :

                        ----Lower----     ----Upper---->   -Confidence/Coverage-
   Confidence Bounds  : ------E----       ------E----              -- %
   Tolerance Bounds   : ------E----       ------E----              -- %
        Error Factor  : ------E----          Sided                 -- %
 -----------------------------------------------------------------------------------
  Component          1:
  Applications       2:
                     3:
 -----------------------------------------------------------------------------------
                Origin                            Record Type
  Failure Data :  PLNT      LERS-   -    -    -    -    -    -    -    -
  Exposure Data:  PLNT      EXPJ-   -    -    -    -    -    -    -    -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U          Originating Facilities : IPS3-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : N          Failure Severity  : C
  IRADAP Suitable? : U          Include System?   : I  Systems : CC-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y     Subsys. train :
 ---------------------------- REFERENCE INFORMATION --------------------------------
    Document Number :  6380         Detail Reference : TABLE 17
 ----------------------------- ADDITIONAL COMMENTS ---------------------------------


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```

MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

```
   Component: Pumps, Motor Driven
      Design: Unknown
Normal State: Normally Alternating
Failure Mode: Fails to Start                       Data Record Number:  17

--------------------------NUCLARR-CALCULATED-RATES--------------------------
  Median:  2.005E-002  Upper Tolerance:  2.520E-002  Aggregation Type: 1
  Mean  : +0.000E+000  Error Factor   :  1.257E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------
  Number of Failures    :      0       Number of Components  :      3
  Hours Per Component   : ------------ Demand Per Component  :      25
  Total Component Hours: ------------  Total Component Demand: --------

  Probability/Rate   : ------E----     Type         :
  Variance           : ------E----     Units        :
  Standard Deviation : ------E----     Distribution :

                       ----Lower----   ----Upper----  -Confidence/Coverage-
  Confidence Bounds  : ------E----     ------E----            -- %
  Tolerance Bounds   : ------E----     ------E----            -- %
        Error Factor : ------E----        Sided               -- %

----------------------------------------------------------------------------
Component          1:
Applications       2:
                   3:
----------------------------------------------------------------------------
                Origin                        Record Type
Failure Data :   PLNT       LERS-   -   -   -   -   -   -   -   -
Exposure Data:   PLNT       EXPJ-   -   -   -   -   -   -   -   -

Data Collection Period:  72 through 78 (YY through YY)

Include Circuit? : U       Originating Facilities : IPS3-   -   -
Nuclear Origin?  : Y       Failure Degree    :
Bayesian Update? : N       Failure Severity : C
IRADAP Suitable? : U       Include System?  : I  Systems : CB-  -  -  -
Safety Grade?    : U
Primary Failure? : Y    Subsys. train :

------------------------- REFERENCE INFORMATION ----------------------------
  Document Number :  6380      Detail Reference : TABLE 17

------------------------- ADDITIONAL COMMENTS ------------------------------


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```

```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

   Component: Pumps, Motor Driven
      Design: Unknown
Normal State: Normally Alternating
Failure Mode: Fails to Start                         Data Record Number:  18

-------------------------NUCLARR-CALCULATED-RATES-------------------------------
  Median:  4.524E-003   Upper Tolerance:  3.750E-002   Aggregation Type: 1
  Mean  : +0.000E+000   Error Factor   :  8.290E+000

-------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------------
  Number of Failures    :       0         Number of Components  :       2
  Hours Per Component   : ------------    Demand Per Component  :       25
  Total Component Hours: ------------     Total Component Demand: --------

  Probability/Rate    : ------E----       Type          :
  Variance            : ------E----       Units         :
  Standard Deviation : ------E----        Distribution :

                        ----Lower----     ----Upper----   -Confidence/Coverage-
  Confidence Bounds   : ------E----       ------E----              -- %
  Tolerance Bounds    : ------E----       ------E----              -- %
        Error Factor : ------E----           Sided                 -- %

--------------------------------------------------------------------------------
Component          1:
Applications       2:
                   3:
--------------------------------------------------------------------------------
                Origin                         Record Type
Failure Data :   PLNT        LERS-   -   -   -   -   -   -   -   -
Exposure Data:   PLNT        EXPJ-   -   -   -   -   -   -   -   -

Data Collection Period:  72 through 78 (YY through YY)

Include Circuit? : U         Originating Facilities : IPS3-    -    -
Nuclear Origin?  : Y         Failure Degree    :
Bayesian Update? : N         Failure Severity : C
IRADAP Suitable? : U         Include System?   : I  Systems : CA-  -  -  -
Safety Grade?    : U
Primary Failure? : Y     Subsys. train :

-------------------------- REFERENCE INFORMATION -------------------------------
  Document Number :  6380        Detail Reference : TABLE 17

--------------------------- ADDITIONAL COMMENTS --------------------------------


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```

```
       MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Alternating
  Failure Mode: Fails to Start                        Data Record Number:  19

 ----------------------NUCLARR-CALCULATED-RATES-----------------------------
    Median:  1.016E-002  Upper Tolerance:  1.270E-002  Aggregation Type: 1
    Mean   : +0.000E+000  Error Factor   :  1.250E+000

 --------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
    Number of Failures   :      0       Number of Components  :       6
    Hours Per Component  : ------------ Demand Per Component  :      25
    Total Component Hours: ------------ Total Component Demand: --------

    Probability/Rate   : ------E----    Type         :
    Variance           : ------E----    Units        :
    Standard Deviation : ------E----    Distribution :

                         ---Lower---    ---Upper---    -Confidence/Coverage-
    Confidence Bounds  : ------E----    ------E----              -- %
    Tolerance Bounds   : ------E----    ------E----              -- %
          Error Factor : ------E----       Sided                 -- %

 ---------------------------------------------------------------------------
  Component          1:
  Applications       2:
                     3:
 ---------------------------------------------------------------------------
                   Origin                   Record Type
  Failure Data :   PLNT     LERS-   -   -   -   -   -   -   -   -
  Exposure Data:   PLNT     EXPJ-   -   -   -   -   -   -   -   -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U       Originating Facilities : IPS3-    -    -
  Nuclear Origin?  : Y       Failure Degree    :
  Bayesian Update? : N       Failure Severity : C
  IRADAP Suitable? : U       Include System?  : I  Systems : BS-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y    Subsys. train :

 ------------------------- REFERENCE INFORMATION ---------------------------
    Document Number :  6380       Detail Reference : TABLE 17
 --------------------------- ADDITIONAL COMMENTS ---------------------------



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```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Alternating
  Failure Mode: Fails to Start                          Data Record Number:  20

 ------------------------------NUCLARR-CALCULATED-RATES------------------------------
    Median:  5.049E-003   Upper Tolerance:  6.294E-003   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  1.247E+000

 -------------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
    Number of Failures     :      0         Number of Components  :      4
    Hours Per Component    : ------------   Demand Per Component  :     76
    Total Component Hours: ------------     Total Component Demand: --------

    Probability/Rate     : ------E----      Type         :
    Variance             : ------E----      Units        :
    Standard Deviation : ------E----        Distribution :

                            ---Lower---      ---Upper---    -Confidence/Coverage-
    Confidence Bounds    : ------E----      ------E----              -- %
    Tolerance Bounds     : ------E----      ------E----              -- %
          Error Factor : ------E----          Sided                  -- %

 ------------------------------------------------------------------------------------
  Component           1:
  Applications        2:
                      3:
 ------------------------------------------------------------------------------------
                 Origin                           Record Type
  Failure Data :  PLNT        LERS-   -    -    -    -    -    -    -    -
  Exposure Data:  PLNT        EXPJ-   -    -    -    -    -    -    -    -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U          Originating Facilities : HNP1-    -    -
  Nuclear Origin?  : Y          Failure Degree     :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : U          Include System?  : I  Systems : BS-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y     Subsys. train :

 ------------------------------- REFERENCE INFORMATION -------------------------------
    Document Number :  6380        Detail Reference : TABLE 17

 --------------------------------- ADDITIONAL COMMENTS ---------------------------------

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```

```
             MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Alternating
  Failure Mode: Fails to Start                          Data Record Number:  21

------------------------------NUCLARR-CALCULATED-RATES-------------------------------
    Median:  1.003E-002   Upper Tolerance:  1.254E-002   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  1.250E+000

--------------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
    Number of Failures    :      0        Number of Components  :      2
    Hours Per Component   : ------------  Demand Per Component  :      76
    Total Component Hours: ------------   Total Component Demand: --------

    Probability/Rate    : ------E----     Type          :   *
    Variance            : ------E----     Units         :
    Standard Deviation  : ------E----     Distribution  :

                          ---Lower---      ---Upper---    -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----            -- %
    Tolerance Bounds    : ------E----      ------E----            -- %
          Error Factor  : ------E----         Sided               -- %

-------------------------------------------------------------------------------------
  Component           1:
  Applications        2:
                      3:
-------------------------------------------------------------------------------------
                   Origin                      Record Type
  Failure Data :   PLNT        LERS-   -   -   -   -   -   -   -   -
  Exposure Data:   PLNT        EXPJ-   -   -   -   -   -   -   -   -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U         Originating Facilities : HNP1-    -    -
  Nuclear Origin?  : Y         Failure Degree    :
  Bayesian Update? : N         Failure Severity : C
  IRADAP Suitable? : U         Include System?  : I   Systems : CA-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y      Subsys. train :

------------------------------ REFERENCE INFORMATION --------------------------------
    Document Number :  6380        Detail Reference : TABLE 17
------------------------------- ADDITIONAL COMMENTS ---------------------------------


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```

```
             MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

      Component: Pumps, Motor Driven
         Design: Unknown
   Normal State: Normally Alternating
   Failure Mode: Fails to Start                           Data Record Number:  22

 ---------------------------NUCLARR-CALCULATED-RATES-----------------------------
     Median:  6.717E-003   Upper Tolerance:  8.385E-003   Aggregation Type: 1
     Mean   : +0.000E+000  Error Factor    :  1.248E+000

 ------------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
     Number of Failures      :      0          Number of Components   :      3
     Hours Per Component     : ------------    Demand Per Component   :      76
     Total Component Hours:  ------------    Total Component Demand: --------

     Probability/Rate    : ------E----         Type         :
     Variance            : ------E----         Units        :
     Standard Deviation : ------E----         Distribution :

                           ----Lower----    ----Upper----   -Confidence/Coverage-
     Confidence Bounds  : ------E----      ------E----              -- %
     Tolerance Bounds   : ------E----      ------E----              -- %
           Error Factor : ------E----         Sided                 -- %

 --------------------------------------------------------------------------------
   Component          1:
   Applications       2:
                      3:
 --------------------------------------------------------------------------------
                 Origin                          Record Type
   Failure Data :   PLNT       LERS-    -    -    -    -    -    -    -    -
   Exposure Data:   PLNT       EXPJ-    -    -    -    -    -    -    -    -

   Data Collection Period:  72 through 78 (YY through YY)

   Include Circuit? : U         Originating Facilities : HNP1-    -    -
   Nuclear Origin?  : Y         Failure Degree    :
   Bayesian Update? : N         Failure Severity : C
   IRADAP Suitable? : U         Include System?   : I  Systems : CB-  -  -  -
   Safety Grade?    : U
   Primary Failure? : Y    Subsys. train :

 ------------------------------ REFERENCE INFORMATION ----------------------------
      Document Number :  6380        Detail Reference : TABLE 17

 ------------------------------ ADDITIONAL COMMENTS ------------------------------


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```

MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

Component: Pumps, Motor Driven
Design: Unknown
Normal State: Normally Alternating
Failure Mode: Fails to Start

Data Record Number: 23

NUCLARR-CALCULATED-RATES

Median: 6.717E-003 Upper Tolerance: 8.385E-003 Aggregation Type: 1
Mean : +0.000E+000 Error Factor : 1.248E+000

REFERENCE-RAW-and-PROBABILITY-DATA

Number of Failures : 0 Number of Components : 3
Hours Per Component : ------------ Demand Per Component : 76
Total Component Hours: ------------ Total Component Demand: --------

Probability/Rate : ------E---- Type :
Variance : ------E---- Units :
Standard Deviation : ------E---- Distribution :

	Lower	Upper	Confidence/Coverage
Confidence Bounds :	------E----	------E----	-- %
Tolerance Bounds :	------E----	------E----	-- %
Error Factor :	------E----	Sided	-- %

Component Applications
1:
2:
3:

	Origin	Record Type
Failure Data :	PLNT	LERS- - - - - - - - -
Exposure Data:	PLNT	EXPJ- - - - - - - - -

Data Collection Period: 72 through 78 (YY through YY)

Include Circuit? : U Originating Facilities : HNP1- - -
Nuclear Origin? : Y Failure Degree :
Bayesian Update? : N Failure Severity : C
IRADAP Suitable? : U Include System? : I Systems : CC- - - -
Safety Grade? : U
Primary Failure? : Y Subsys. train :

REFERENCE INFORMATION

Document Number : 6380 Detail Reference : TABLE 17

ADDITIONAL COMMENTS

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Start                        Data Record Number:   1

------------------------NUCLARR-CALCULATED-RATES------------------------------
    Median:  1.516E-002   Upper Tolerance:  2.500E-002   Aggregation Type: 1
    Mean  :  1.435E-002   Error Factor    :  1.650E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures    :      3        Number of Components   : ------
    Hours Per Component   : ------------  Demand Per Component   : --------
    Total Component Hours: ------------   Total Component Demand:       209

    Probability/Rate    :  1.430E-002     Type         : MEAN
    Variance            : ------E----     Units        : F/D
    Standard Deviation  : ------E----     Distribution : BINOM

                          ---Lower---    ---Upper---   -Confidence/Coverage-
    Confidence Bounds   :  3.000E-003     2.500E-002            90 %
    Tolerance Bounds    : ------E----    ------E----            -- %
         Error Factor   : ------E----       Sided               -- %

------------------------------------------------------------------------------
  Component           1: Water, High Purity/Demineralized - Int.
  Applications        2:
                      3:
------------------------------------------------------------------------------
                    Origin                 Record Type
  Failure Data :     PLNT      PMLG-CRLB-SURV-LERS-DEVR-OTHR-    -    -    -
  Exposure Data:     PLNT      CRLB-SURV-   -    -    -    -    -    -    -

  Data Collection Period:  70 through 79 (YY through YY)

  Include Circuit? : U          Originating Facilities : BRP1-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : SG-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U     Subsys. train :

------------------------- REFERENCE INFORMATION ------------------------------
    Document Number : 20081        Detail Reference : III-10

--------------------------- ADDITIONAL COMMENTS ------------------------------
  FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP.

------------------------------------------------------------------------------
```

```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Start                          Data Record Number:   2

 ----------------------------NUCLARR-CALCULATED-RATES----------------------------
    Median:  2.559E-003   Upper Tolerance:  1.020E-002   Aggregation Type: 1
    Mean  :  2.165E-003   Error Factor   :  3.986E+000

 ------------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures    :        1         Number of Components  : ------
    Hours Per Component   : ------------     Demand Per Component  : --------
    Total Component Hours: ------------      Total Component Demand:       462

    Probability/Rate    :  2.160E-003        Type         : MEAN
    Variance            : -------E----       Units        : F/D
    Standard Deviation  : -------E----       Distribution : POISSON

                          ---Lower----      ---Upper----   -Confidence/Coverage-
    Confidence Bounds   :  1.110E-004        1.020E-002            90 %
    Tolerance Bounds    : -------E----      -------E----           -- %
          Error Factor  : -------E----         Sided               -- %

 --------------------------------------------------------------------------------
  Component          1: Water, High Purity/Demineralized - Int.
  Applications       2:
                     3:
 --------------------------------------------------------------------------------
                 Origin                        Record Type
  Failure Data :  PLNT       PMLG-CRLB-SURV-LERS-DEVR-OTHR-    -    -    -
  Exposure Data:  PLNT       CRLB-SURV-   -    -    -    -     -    -    -

  Data Collection Period:  70 through 79 (YY through YY)

  Include Circuit? : U          Originating Facilities : BRP1-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : SD-  -   -   -
  Safety Grade?    : N
  Primary Failure? : U     Subsys. train :

 ------------------------- REFERENCE INFORMATION --------------------------------
    Document Number : 20081         Detail Reference : III-10

 --------------------------- ADDITIONAL COMMENTS --------------------------------
  FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP.

 --------------------------------------------------------------------------------
```

MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

```
     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Start                          Data Record Number:   3

------------------------------NUCLARR-CALCULATED-RATES---------------------------
   Median:  6.123E-003   Upper Tolerance:  1.770E-002   Aggregation Type: 1
   Mean  :  5.634E-003   Error Factor   :  2.891E+000

---------------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
   Number of Failures    :        2         Number of Components  : ------
   Hours Per Component   : ------------     Demand Per Component  : --------
   Total Component Hours: ------------     Total Component Demand:      355

   Probability/Rate     :  5.630E-003       Type          : MEAN
   Variance             : ------E----       Units         : F/D
   Standard Deviation   : ------E----       Distribution  : POISSON

                          ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds    :  1.000E-003       1.770E-002              90 %
   Tolerance Bounds     : ------E----      -------E----             -- %
         Error Factor   : ------E----         Sided                 -- %

---------------------------------------------------------------------------------
 Component             1: Unknown Internal Environment
 Applications          2:
                       3:
---------------------------------------------------------------------------------
                Origin                    Record Type
 Failure Data :  PLNT      PMLG-CRLB-SURV-LERS-DEVR-OTHR-    -    -    -
 Exposure Data:  PLNT      CRLB-SURV-   -    -    -    -    -    -    -    -

 Data Collection Period:  70 through 79 (YY through YY)

 Include Circuit? : U       Originating Facilities : BRP1-    -    -
 Nuclear Origin?  : Y       Failure Degree    :
 Bayesian Update? : N       Failure Severity : C
 IRADAP Suitable? : Y       Include System?  : I  Systems : KP-  -  -  -
 Safety Grade?    : N
 Primary Failure? : U    Subsys. train :

------------------------------- REFERENCE INFORMATION ----------------------------
   Document Number : 20081        Detail Reference : III-10

--------------------------------- ADDITIONAL COMMENTS -----------------------------
 FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP.

---------------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Pumps, Motor Driven
      Design: Unknown
Normal State: Normally Standby
Failure Mode: Fails to Start                           Data Record Number:   4

----------------------------NUCLARR-CALCULATED-RATES----------------------------
  Median:  1.238E-002   Upper Tolerance:  9.988E-002   Aggregation Type: 1
  Mean  : +0.000E+000   Error Factor   :  8.066E+000

------------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
  Number of Failures   :      0         Number of Components  : ------
  Hours Per Component  : ------------   Demand Per Component  : --------
  Total Component Hours: ------------   Total Component Demand:       18

  Probability/Rate   :  2.700E-004      Type         : MEDIAN
  Variance           :  3.500E-006      Units        : F/D
  Standard Deviation :  9.700E-007      Distribution : DISCRETE

                       ----Lower----   ----Upper----  -Confidence/Coverage-
  Confidence Bounds  : -------E----    -------E----             -- %
  Tolerance Bounds   :  1.400E-005      1.400E-003              90 %
        Error Factor : ------E----         Sided                -- %

--------------------------------------------------------------------------------
Component          1: Water, High Purity/Demineralized - Int.
Applications       2:
                   3:
--------------------------------------------------------------------------------
                 Origin                          Record Type
Failure Data :   PLNT       PWWR-LERS-INCD-    -    -    -    -    -    -
Exposure Data:   PLNT       TSTR-PMTR-CRLB-    -    -    -    -    -    -

Data Collection Period:  75 through 80 (YY through YY)

Include Circuit? : U         Originating Facilities : NEE3-    -    -
Nuclear Origin?  : Y         Failure Degree    :
Bayesian Update? : Y         Failure Severity : C
IRADAP Suitable? : Y         Include System?  : I  Systems : BA-  -  -  -
Safety Grade?    : Y
Primary Failure? : U    Subsys. train :

---------------------------- REFERENCE INFORMATION -----------------------------
   Document Number : 21281        Detail Reference : 5-21

---------------------------- ADDITIONAL COMMENTS -------------------------------
MEAN = 4.80E-04/D

--------------------------------------------------------------------------------
```

```
         MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Pumps, Motor Driven
      Design: Unknown
Normal State: Normally Standby
Failure Mode: Fails to Start                          Data Record Number:   5

————————————————————NUCLARR-CALCULATED-RATES————————————————————
  Median:  1.012E-003   Upper Tolerance:  2.249E-003   Aggregation Type: 1
  Mean  :  9.560E-004   Error Factor   :  2.224E+000

————————————————————REFERENCE-RAW-and-PROBABILITY-DATA————————————————————
  Number of Failures    :      3          Number of Components   : ------
  Hours Per Component   : ------------    Demand Per Component   : --------
  Total Component Hours: ------------     Total Component Demand:     3138

  Probability/Rate    :  7.210E-004       Type         : MEAN
  Variance            :  1.910E-007       Units        : F/D
  Standard Deviation : ------E----        Distribution : DISCRETE

                        ——Lower——      ——Upper——     -Confidence/Coverage-
  Confidence Bounds   : ------E----    ------E----             -- %
  Tolerance Bounds    : ------E----    ------E----             -- %
        Error Factor : ------E----        Sided                -- %
——————————————————————————————————————————————————————————————————————————
Component          1: Unknown Internal Environment
Applications       2:
                   3:
——————————————————————————————————————————————————————————————————————————
                Origin                  Record Type
Failure Data :   PLNT      LERS-CRLB-PMLG-PMTR-DEVR-    -    -    -    -
Exposure Data:   PLNT      TSTR-    -    -    -    -    -    -    -    -

Data Collection Period:  73 through 79 (YY through YY)

Include Circuit? : U         Originating Facilities : ZIS1-ZIS2-    -
Nuclear Origin?  : Y         Failure Degree    :
Bayesian Update? : Y         Failure Severity : C
IRADAP Suitable? : Y         Include System?  : E  Systems : BA-  -  -  -
Safety Grade?    : Y
Primary Failure? : U     Subsys. train :
———————————————————————— REFERENCE INFORMATION ————————————————————————
   Document Number : 21381       Detail Reference : 1.5-72
———————————————————————— ADDITIONAL COMMENTS ——————————————————————————


——————————————————————————————————————————————————————————————————————————
```

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Pumps, Motor Driven
      Design: Unknown
Normal State: Normally Standby
Failure Mode: Fails to Start                        Data Record Number:   6

-------------------------NUCLARR-CALCULATED-RATES---------------------------
  Median:  2.667E-002  Upper Tolerance:  4.781E-002  Aggregation Type: 1
  Mean  :  2.597E-002  Error Factor   :  1.793E+000

-------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
  Number of Failures   :      6          Number of Components  : ------
  Hours Per Component  : ------------    Demand Per Component  : --------
  Total Component Hours: ------------    Total Component Demand:      231

  Probability/Rate   :  2.290E-002       Type         : MEAN
  Variance           :  7.600E-005       Units        : F/D
  Standard Deviation : ------E----       Distribution : DISCRETE

                      ----Lower----   ----Upper----  -Confidence/Coverage-
  Confidence Bounds  : ------E----     ------E----              -- %
  Tolerance Bounds   : ------E----     ------E----              -- %
       Error Factor  : ------E----        Sided                 -- %

----------------------------------------------------------------------------
Component          1: Water, High Purity/Demineralized - Int.
Applications       2:
                   3:
----------------------------------------------------------------------------
                Origin                 Record Type
Failure Data :   PLNT      LERS-CRLB-PMLG-PMTR-DEVR-    -    -    -    -
Exposure Data:   PLNT      TSTR-   -    -    -    -    -    -    -    -

Data Collection Period:  73 through 79 (YY through YY)

Include Circuit? : U         Originating Facilities : ZIS1-ZIS2-    -
Nuclear Origin?  : Y         Failure Degree    :
Bayesian Update? : Y         Failure Severity  : C
IRADAP Suitable? : Y         Include System?  : I  Systems : BA-  -  -  -
Safety Grade?    : Y
Primary Failure? : U    Subsys. train :
--------------------------- REFERENCE INFORMATION -------------------------
  Document Number : 21381        Detail Reference : 1.5-72
---------------------------- ADDITIONAL COMMENTS --------------------------

----------------------------------------------------------------------------
```

-192

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Pumps, Motor Driven
      Design: Unknown
Normal State: Normally Standby
Failure Mode: Fails to Start                       Data Record Number:   7

_____________________NUCLARR-CALCULATED-RATES_______________________________
  Median: 9.022E-003   Upper Tolerance:  1.821E-002   Aggregation Type: 1
  Mean  : 8.658E-003   Error Factor   :  2.019E+000

____________________REFERENCE-RAW-and-PROBABILITY-DATA______________________
  Number of Failures   :     4           Number of Components  : ------
  Hours Per Component  : ------------    Demand Per Component  : --------
  Total Component Hours: ------------    Total Component Demand:      462

  Probability/Rate     :  5.020E-003     Type           : MEAN
  Variance             :  9.260E-006     Units          : F/D
  Standard Deviation : ------E----       Distribution : DISCRETE

                          ——Lower——       ——Upper——     -Confidence/Coverage-
  Confidence Bounds  : ------E----     ------E----                -- %
  Tolerance Bounds   : ------E----     ------E----                -- %
        Error Factor : ------E----        Sided                   -- %
____________________________________________________________________________
Component          1: Water, High Purity/Demineralized - Int.
Applications       2:
                   3:
____________________________________________________________________________
                Origin                      Record Type
Failure Data :   PLNT       LERS-CRLB-PMLG-PMTR-DEVR-    -    -    -    -
Exposure Data:   PLNT       TSTR-   -    -    -    -    -    -    -    -

Data Collection Period:  73 through 79 (YY through YY)

Include Circuit? : U        Originating Facilities : ZIS1-ZIS2-    -
Nuclear Origin?  : Y        Failure Degree     :
Bayesian Update? : Y        Failure Severity : C
IRADAP Suitable? : Y        Include System?  : I  Systems : BA-  -  -  -
Safety Grade?    : Y
Primary Failure? : U     Subsys. train :
________________________ REFERENCE INFORMATION _____________________________
  Document Number : 21381      Detail Reference : 1.5-76
_________________________ ADDITIONAL COMMENTS ______________________________

____________________________________________________________________________
```

```
              MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Start                          Data Record Number:   8

 ----------------------------NUCLARR-CALCULATED-RATES----------------------------
    Median:  1.616E-003   Upper Tolerance:  2.010E-003   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  1.244E+000

 -----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures   :       0        Number of Components  : ------
    Hours Per Component  : ------------   Demand Per Component  : --------
    Total Component Hours: ------------   Total Component Demand:      954

    Probability/Rate     :  7.480E-004    Type          : MEAN
    Variance             :  3.150E-007    Units         : F/D
    Standard Deviation   : ------E----    Distribution  : BETA

                          ----Lower----   ----Upper----   -Confidence/Coverage-
    Confidence Bounds    : ------E----     2.010E-003              95 %
    Tolerance Bounds     : ------E----    ------E----              -- %
          Error Factor   : ------E----       Sided                 -- %

 --------------------------------------------------------------------------------
  Component          1: Unknown Internal Environment
  Applications       2:
                     3:
 --------------------------------------------------------------------------------
                 Origin                        Record Type
  Failure Data :  PLNT      UTDB-LERS-PMLG-SSLB-    -    -    -    -    -
  Exposure Data:  PLNT      DCCN-PMTR-RHLG-    -    -    -    -    -    -

  Data Collection Period:  71 through 84 (YY through YY)

  Include Circuit? : U          Originating Facilities : MNS1-    -    -
  Nuclear Origin?  : Y          Failure Degree   :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : XC-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : U     Subsys. train :

 ---------------------------- REFERENCE INFORMATION -----------------------------
     Document Number : 21185        Detail Reference : 3.1-5,12

 ----------------------------- ADDITIONAL COMMENTS ------------------------------


 --------------------------------------------------------------------------------
```

```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Pumps, Motor Driven
         Design: Unknown
   Normal State: Normally Standby
   Failure Mode: Fails to Start                        Data Record Number:   9

------------------------------NUCLARR-CALCULATED-RATES--------------------------
     Median:  1.223E-002   Upper Tolerance:  2.720E-002   Aggregation Type: 1
     Mean  :  1.158E-002   Error Factor   :  2.223E+000

----------------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------
     Number of Failures    :       3         Number of Components  : ------
     Hours Per Component   : ------------    Demand Per Component  : --------
     Total Component Hours: ------------     Total Component Demand:      259

     Probability/Rate   :  2.840E-003        Type         : MEAN
     Variance           :  1.690E-006        Units        : F/D
     Standard Deviation : ------E----        Distribution : BETA

                          ----Lower----   ----Upper----  -Confidence/Coverage-
     Confidence Bounds  : ------E----      2.720E-002              95 %
     Tolerance Bounds   : ------E----     ------E----              -- %
           Error Factor : ------E----        Sided                 -- %

--------------------------------------------------------------------------------
   Component            1: Water, Borated Internal Environment
   Applications         2:
                        3:
--------------------------------------------------------------------------------
                 Origin                     Record Type
   Failure Data :  PLNT     UTDB-LERS-PMLG-SSLB-   -    -    -    -    -
   Exposure Data:  PLNT     DCCN-PMTR-RHLG-   -    -    -    -    -    -

   Data Collection Period:  71 through 84 (YY through YY)

   Include Circuit? : U         Originating Facilities : MNS1-    -    -
   Nuclear Origin?  : Y         Failure Degree    :
   Bayesian Update? : Y         Failure Severity : C
   IRADAP Suitable? : Y         Include System?  : I  Systems : CH-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : U     Subsys. train :
---------------------------- REFERENCE INFORMATION -----------------------------
      Document Number : 21185        Detail Reference : 3.1-5,12
----------------------------- ADDITIONAL COMMENTS ------------------------------


--------------------------------------------------------------------------------
```

```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Start                         Data Record Number:  10

 ----------------------------NUCLARR-CALCULATED-RATES-----------------------------
    Median:  3.714E-003   Upper Tolerance:  4.640E-003   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  1.249E+000

 -----------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
    Number of Failures     :       0        Number of Components   : ------
    Hours Per Component    : ------------   Demand Per Component   : --------
    Total Component Hours: ------------     Total Component Demand:       414

    Probability/Rate    :  9.670E-004       Type          : MEAN
    Variance            :  5.260E-007       Units         : F/D
    Standard Deviation : ------E----        Distribution : BETA

                         ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds  : ------E----      4.640E-003              95 %
    Tolerance Bounds   : ------E----      ------E----             -- %
          Error Factor : ------E----         Sided                -- %

 ----------------------------------------------------------------------------------
  Component          1: Water, High Purity/Demineralized - Int.
  Applications       2:
                     3:
 ----------------------------------------------------------------------------------
                  Origin                        Record Type
  Failure Data :   PLNT      UTDB-LERS-PMLG-SSLB-   -    -    -    -    -
  Exposure Data:   PLNT      DCCN-PMTR-RHLG-   -    -    -    -    -    -

  Data Collection Period:  71 through 84 (YY through YY)

  Include Circuit? : U         Originating Facilities : MNS1-    -    -
  Nuclear Origin?  : Y         Failure Degree    :
  Bayesian Update? : Y         Failure Severity : C
  IRADAP Suitable? : Y         Include System?  : I  Systems : KB-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U     Subsys. train :

 ---------------------------- REFERENCE INFORMATION -------------------------------
    Document Number : 21185        Detail Reference : 3.1-5,12

 ----------------------------- ADDITIONAL COMMENTS --------------------------------


 ----------------------------------------------------------------------------------
```

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Start                     Data Record Number:  11

---------------------------NUCLARR-CALCULATED-RATES---------------------------
   Median:  4.688E-003  Upper Tolerance:  1.550E-002   Aggregation Type: 1
   Mean  :  3.968E-003  Error Factor   :  3.306E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
   Number of Failures    :       1          Number of Components  : ------
   Hours Per Component   : ------------     Demand Per Component  : --------
   Total Component Hours: ------------      Total Component Demand:      252

   Probability/Rate    :  1.660E-003        Type         : MEAN
   Variance            :  9.880E-007        Units        : F/D
   Standard Deviation : ------E----         Distribution : BETA

                          ----Lower----     ----Upper----   -Confidence/Coverage-
   Confidence Bounds   : ------E----        1.550E-002              95 %
   Tolerance Bounds    : ------E----        ------E----             -- %
         Error Factor : ------E----           Sided                 -- %

------------------------------------------------------------------------------
  Component          1: Water, High Purity/Demineralized - Int.
  Applications       2:
                     3:
------------------------------------------------------------------------------
                    Origin                      Record Type
  Failure Data :    PLNT     UTDB-LERS-PMLG-SSLB-   -    -    -    -    -
  Exposure Data:    PLNT     DCCN-PMTR-RHLG-   -    -    -    -    -    -

  Data Collection Period:  71 through 84 (YY through YY)

  Include Circuit? : U          Originating Facilities : MNS1-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?   : I   Systems : SD-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U     Subsys. train :
------------------------------- REFERENCE INFORMATION -------------------------
    Document Number : 21185        Detail Reference : 3.1-5,13
-------------------------------- ADDITIONAL COMMENTS -------------------------


------------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Pumps, Motor Driven
      Design: Unknown
Normal State: Normally Standby
Failure Mode: Fails to Start                       Data Record Number:  12

-----------------------NUCLARR-CALCULATED-RATES--------------------------
  Median:  6.410E-003  Upper Tolerance:  8.040E-003  Aggregation Type: 1
  Mean  : +0.000E+000  Error Factor   :  1.254E+000

-------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
  Number of Failures   :      0       Number of Components  : ------
  Hours Per Component  : ------------ Demand Per Component  : --------
  Total Component Hours: ------------ Total Component Demand:      239

  Probability/Rate   :  1.070E-003    Type         : MEAN
  Variance           :  6.420E-007    Units        : F/D
  Standard Deviation : ------E----    Distribution : BETA

                     ----Lower----   ----Upper----  -Confidence/Coverage-
  Confidence Bounds  : ------E----    8.040E-003           95 %
  Tolerance Bounds   : ------E----   ------E----           -- %
        Error Factor : ------E----       Sided             -- %

-------------------------------------------------------------------------
Component          1: Water, High Purity/Demineralized - Int.
Applications       2:
                   3:
-------------------------------------------------------------------------
                 Origin                     Record Type
Failure Data :    PLNT       UTDB-LERS-PMLG-SSLB-   -    -    -    -    -
Exposure Data:    PLNT       DCCN-PMTR-RHLG-    -    -    -    -    -    -

Data Collection Period:  71 through 84 (YY through YY)

Include Circuit? : U          Originating Facilities : MNS1-    -    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : Y          Failure Severity : C
IRADAP Suitable? : Y          Include System?  : I  Systems : SD-  -  -  -
Safety Grade?    : N
Primary Failure? : U    Subsys. train :

------------------------- REFERENCE INFORMATION -------------------------
  Document Number : 21185       Detail Reference : 3.1-5,13

-------------------------- ADDITIONAL COMMENTS --------------------------


-------------------------------------------------------------------------
```

```
      MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Start                      Data Record Number:  13

 ---------------------NUCLARR-CALCULATED-RATES------------------------------
    Median:  9.654E-003  Upper Tolerance:  1.220E-002  Aggregation Type: 1
    Mean  : +0.000E+000  Error Factor   :  1.264E+000

 ---------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------------
    Number of Failures   :     0         Number of Components  : ------
    Hours Per Component  : ------------  Demand Per Component  : --------
    Total Component Hours: ------------  Total Component Demand:      158

    Probability/Rate   :  1.120E-003     Type         : MEAN
    Variance           :  7.100E-007     Units        : F/D
    Standard Deviation : ------E----     Distribution : BETA

                         ---Lower---    ---Upper---   -Confidence/Coverage-
    Confidence Bounds  : ------E----     1.220E-002            95 %
    Tolerance Bounds   : ------E----    ------E----            -- %
          Error Factor : ------E----       Sided               -- %

 ---------------------------------------------------------------------------
  Component          1: Water, High Purity/Demineralized - Int.
  Applications       2:
                     3:
 ---------------------------------------------------------------------------
                 Origin                      Record Type
  Failure Data :  PLNT     UTDB-LERS-PMLG-SSLB-   -    -    -    -    -
  Exposure Data:  PLNT     DCCN-PMTR-RHLG-    -    -    -    -    -    -

  Data Collection Period:  71 through 84 (YY through YY)

  Include Circuit? : U        Originating Facilities : MNS1-      -    -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : Y        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I  Systems : SD-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U     Subsys. train :

 ------------------------- REFERENCE INFORMATION ---------------------------
    Document Number : 21185        Detail Reference : 3.1-5,13

 -------------------------- ADDITIONAL COMMENTS ----------------------------


 ---------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Pumps, Motor Driven
         Design: Unknown
   Normal State: Normally Standby
   Failure Mode: Fails to Start                       Data Record Number:  14

 ------------------------NUCLARR-CALCULATED-RATES------------------------------
    Median:  3.456E-003   Upper Tolerance:  1.140E-002   Aggregation Type: 1
    Mean  :  2.924E-003   Error Factor   :  3.299E+000

 -------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
    Number of Failures    :      1        Number of Components   : ------
    Hours Per Component   : ------------  Demand Per Component   : --------
    Total Component Hours: ------------   Total Component Demand:      342

    Probability/Rate    :  1.570E-003     Type         : MEAN
    Variance            :  8.890E-007     Units        : F/D
    Standard Deviation : ------E----      Distribution : BETA

                          ---Lower---    ---Upper---   -Confidence/Coverage-
    Confidence Bounds   : ------E----    1.140E-002            95 %
    Tolerance Bounds    : ------E----    ------E----           -- %
          Error Factor : ------E----       Sided               -- %

 ------------------------------------------------------------------------------
  Component        1: Water, High Purity/Demineralized - Int.
  Applications     2:
                   3:
 ------------------------------------------------------------------------------
                  Origin                    Record Type
  Failure Data :   PLNT     UTDB-LERS-PMLG-SSLB-   -    -    -    -    -
  Exposure Data:   PLNT     DCCN-PMTR-RHLG-   -    -    -    -    -    -

  Data Collection Period:  71 through 84 (YY through YY)

  Include Circuit? : U        Originating Facilities : MNS1-    -    -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : Y        Failure Severity : C
  IRADAP Suitable? : Y        Include System?   : I   Systems : AA-   -   -   -
  Safety Grade?    : N
  Primary Failure? : U     Subsys. train :

 ------------------------- REFERENCE INFORMATION ------------------------------
    Document Number : 21185       Detail Reference : 3.1-6,13
 ------------------------- ADDITIONAL COMMENTS --------------------------------


 ------------------------------------------------------------------------------
```

```
         MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Start                       Data Record Number:  15

———————————————————————NUCLARR—CALCULATED—RATES————————————————————————————
    Median:  9.654E-003  Upper Tolerance:  1.220E-002  Aggregation Type: 1
    Mean   : +0.000E+000  Error Factor   :  1.264E+000

——————————————————REFERENCE—RAW—and—PROBABILITY—DATA————————————————————————
    Number of Failures    :       0        Number of Components   : ------
    Hours Per Component   : ------------   Demand Per Component   : --------
    Total Component Hours: ------------    Total Component Demand:      158

    Probability/Rate    :  1.130E-003      Type          : MEAN
    Variance            :  7.110E-007      Units         : F/D
    Standard Deviation : ------E----       Distribution : BETA

                          ———Lower———     ———Upper———    -Confidence/Coverage-
    Confidence Bounds  : ------E----      1.220E-002              95 %
    Tolerance Bounds   : ------E----     -------E----             -- %
          Error Factor : ------E----        Sided                 -- %
———————————————————————————————————————————————————————————————————————————
  Component          1: Unknown Internal Environment
  Applications       2:
                     3:
———————————————————————————————————————————————————————————————————————————
                 Origin                     Record Type
  Failure Data :  PLNT       UTDB-LERS-PMLG-SSLB-   -    -    -    -    -
  Exposure Data:  PLNT       DCCN-PMTR-RHLG-   -    -    -    -    -    -

  Data Collection Period:  71 through 84 (YY through YY)

  Include Circuit? : U          Originating Facilities : MNS1-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I   Systems : KP-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U     Subsys. train :
——————————————————————————— REFERENCE INFORMATION —————————————————————————
    Document Number : 21185        Detail Reference : 3.1-6,13
——————————————————————————— ADDITIONAL COMMENTS ———————————————————————————


———————————————————————————————————————————————————————————————————————————
```

MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

```
    Component: Pumps, Motor Driven
       Design: Unknown
 Normal State: Normally Standby
 Failure Mode: Fails to Start                        Data Record Number:  16

 ---------------------------NUCLARR-CALCULATED-RATES---------------------------
   Median:  1.808E-003   Upper Tolerance:  5.962E-003   Aggregation Type: 1
   Mean  :  1.529E-003   Error Factor   :  3.297E+000

 ------------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
   Number of Failures   :       1        Number of Components   : ------
   Hours Per Component  : ------------   Demand Per Component   : --------
   Total Component Hours: ------------   Total Component Demand:      654

   Probability/Rate   :  1.340E-003      Type         : MEAN
   Variance           :  6.450E-007      Units        : F/D
   Standard Deviation : ------E----      Distribution : BETA

                        ---Lower---     ---Upper---    -Confidence/Coverage-
   Confidence Bounds  : ------E----     ------E----              -- %
   Tolerance Bounds   : ------E----     ------E----              -- %
         Error Factor : ------E----        Sided                 -- %

 ------------------------------------------------------------------------------
 Component          1: Unknown Internal Environment
 Applications       2:
                    3:
 ------------------------------------------------------------------------------
                 Origin                    Record Type
 Failure Data :   PLNT      UTDB-LERS-INCD-MOPR-    -    -    -    -    -
 Exposure Data:   PLNT      SSLB-SURV-JOBO-PMMR-    -    -    -    -    -

 Data Collection Period:  74 through 83 (YY through YY)

 Include Circuit? : U          Originating Facilities : HNP1-    -    -
 Nuclear Origin?  : Y          Failure Degree    :
 Bayesian Update? : Y          Failure Severity : C
 IRADAP Suitable? : Y          Include System?  : I  Systems : KP-  -  -  -
 Safety Grade?    : N
 Primary Failure? : U    Subsys. train :

 ------------------------------ REFERENCE INFORMATION --------------------------
   Document Number : 20585       Detail Reference : 4.1-5,11

 ------------------------------ ADDITIONAL COMMENTS ----------------------------


 ------------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

    Component: Pumps, Motor Driven
       Design: Unknown
 Normal State: Normally Standby
 Failure Mode: Fails to Start                         Data Record Number:  17

 ---------------------------NUCLARR-CALCULATED-RATES---------------------------
   Median:  4.234E-003   Upper Tolerance:  1.392E-002   Aggregation Type: 1
   Mean  :  3.584E-003   Error Factor   :  3.288E+000

 ---------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
   Number of Failures    :      1         Number of Components  : ------
   Hours Per Component   : ------------   Demand Per Component  : --------
   Total Component Hours: ------------    Total Component Demand:      279

   Probability/Rate    :  1.640E-003      Type         : MEAN
   Variance            :  9.600E-007      Units        : F/D
   Standard Deviation : ------E----       Distribution : BETA

                         ---Lower---    ---Upper---   -Confidence/Coverage-
   Confidence Bounds   : ------E----    ------E----               -- %
   Tolerance Bounds    : ------E----    ------E----               -- %
         Error Factor : ------E----        Sided                  -- %

 -----------------------------------------------------------------------------
 Component             1: Water, Borated Internal Environment
 Applications          2:
                       3:
 -----------------------------------------------------------------------------
                Origin                      Record Type
 Failure Data :   PLNT      UTDB-LERS-INCD-MOPR-   -   -   -   -   -
 Exposure Data:   PLNT      SSLB-SURV-JOBO-PMMR-   -   -   -   -   -

 Data Collection Period:  74 through 83 (YY through YY)

 Include Circuit? : U         Originating Facilities : HNP1-   -   -
 Nuclear Origin?  : Y         Failure Degree    :
 Bayesian Update? : Y         Failure Severity : C
 IRADAP Suitable? : Y         Include System?  : I  Systems : BP-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : U    Subsys. train :

 ------------------------- REFERENCE INFORMATION ----------------------------
   Document Number : 20585       Detail Reference : 4.1-5,11

 ------------------------- ADDITIONAL COMMENTS ------------------------------


 -----------------------------------------------------------------------------
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```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Start                          Data Record Number:  18

-------------------------NUCLARR-CALCULATED-RATES-------------------------
    Median:  4.291E-003  Upper Tolerance:  5.348E-003  Aggregation Type: 1
    Mean  : +0.000E+000  Error Factor   :  1.246E+000

---------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
    Number of Failures    :      0         Number of Components   : ------
    Hours Per Component   : ------------   Demand Per Component   : --------
    Total Component Hours: ------------    Total Component Demand:      358

    Probability/Rate    :  1.000E-003      Type         : MEAN
    Variance            :  5.620E-007      Units        : F/D
    Standard Deviation : ------E----       Distribution : BETA

                          ----Lower----   ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----      2.790E-003            63 %
    Tolerance Bounds    : ------E----     ------E----            -- %
          Error Factor : ------E----        Sided                 -- %

--------------------------------------------------------------------------
  Component          1: Water, Borated Internal Environment
  Applications       2:
                     3:
--------------------------------------------------------------------------
                   Origin                      Record Type
  Failure Data :    PLNT      UTDB-LERS-INCD-MOPR-    -    -    -    -    -
  Exposure Data:    PLNT      SSLB-SURV-JOBO-PMWR-    -    -    -    -    -

  Data Collection Period:  74 through 83 (YY through YY)

  Include Circuit? : U          Originating Facilities : HNP1-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : CI-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : U     Subsys. train :

------------------------------ REFERENCE INFORMATION ----------------------
    Document Number : 20585        Detail Reference : 4.1-5,11

------------------------------- ADDITIONAL COMMENTS -----------------------


--------------------------------------------------------------------------
```

MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

```
     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Start                          Data Record Number:  19

--------------------------NUCLARR-CALCULATED-RATES------------------------------
    Median:  2.035E-003   Upper Tolerance:  5.180E-003   Aggregation Type: 1
    Mean  :  1.871E-003   Error Factor   :  2.545E+000

------------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures    :       2        Number of Components  : ------
    Hours Per Component   : ------------   Demand Per Component  : --------
    Total Component Hours: ------------   Total Component Demand:     1069

    Probability/Rate    :  1.520E-003      Type          : MEAN
    Variance            :  6.090E-007      Units         : F/D
    Standard Deviation : ------E----      Distribution : BETA

                          ---Lower---     ---Upper---    -Confidence/Coverage-
    Confidence Bounds  : ------E----     ------E----              -- %
    Tolerance Bounds   : ------E----     ------E----              -- %
         Error Factor  : ------E----        Sided                 -- %
--------------------------------------------------------------------------------
  Component            1: Water, Borated Internal Environment
  Applications         2:
                       3:
--------------------------------------------------------------------------------
                   Origin                     Record Type
  Failure Data :   PLNT       UTDB-LERS-INCD-NOPR-    -    -    -    -    -
  Exposure Data:   PLNT       SSLB-SURV-JOBO-PMWR-    -    -    -    -    -

  Data Collection Period:  74 through 83 (YY through YY)

  Include Circuit? : U        Originating Facilities : HNP1-    -    -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : Y        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I   Systems : CA-CB-  -  -
  Safety Grade?    : N
  Primary Failure? : U     Subsys. train :
------------------------------ REFERENCE INFORMATION ---------------------------
    Document Number : 20585        Detail Reference : 4.1-5,11
-------------------------------- ADDITIONAL COMMENTS ---------------------------

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```

```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Start                          Data Record Number:  20

 ---------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  1.994E-002   Upper Tolerance:  3.759E-002   Aggregation Type: 1
    Mean  :  1.931E-002   Error Factor   :  1.886E+000

 -----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures    :      5          Number of Components   : ------
    Hours Per Component   : ------------    Demand Per Component   : --------
    Total Component Hours: ------------    Total Component Demand:       259

    Probability/Rate   :  4.040E-003        Type          : MEAN
    Variance           :  2.390E-006        Units         : F/D
    Standard Deviation : ------E----        Distribution : BETA

                         ----Lower----     ----Upper----    -Confidence/Coverage-
    Confidence Bounds  : ------E----       ------E----                -- %
    Tolerance Bounds   : ------E----       ------E----                -- %
         Error Factor : ------E----          Sided                    -- %

 -------------------------------------------------------------------------------
  Component          1: Unknown Internal Environment
  Applications       2:
                     3:
 -------------------------------------------------------------------------------
                   Origin                        Record Type
  Failure Data :   PLNT        UTDB-LERS-INCD-MOPR-    -    -    -    -    -
  Exposure Data:   PLNT        SSLB-SURV-JOBO-PMMR-    -    -    -    -    -

  Data Collection Period:  74 through 83 (YY through YY)

  Include Circuit? : U          Originating Facilities : HNP1-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?   : I   Systems : CB-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U      Subsys. train :

 --------------------------- REFERENCE INFORMATION -----------------------------
    Document Number : 20585        Detail Reference : 4.1-5,12

 ---------------------------- ADDITIONAL COMMENTS ------------------------------


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```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Start                       Data Record Number:  21

  ─────────────────────NUCLARR-CALCULATED-RATES─────────────────────────────
    Median:  2.413E-002   Upper Tolerance:  3.039E-002   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  1.260E+000

  ───────────────────REFERENCE-RAW-and-PROBABILITY-DATA─────────────────────
    Number of Failures   :       0         Number of Components  :      2
    Hours Per Component  : ------------    Demand Per Component  :     31
    Total Component Hours: ------------    Total Component Demand: --------

    Probability/Rate    : ------E----      Type         :
    Variance            : ------E----      Units        :
    Standard Deviation  : ------E----      Distribution :

                          ───Lower───    ───Upper───    -Confidence/Coverage-
    Confidence Bounds   : ------E----    ------E----               -- %
    Tolerance Bounds    : ------E----    ------E----               -- %
          Error Factor  : ------E----       Sided                  -- %

  ───────────────────────────────────────────────────────────────────────────
  Component          1:
  Applications       2:
                     3:
  ───────────────────────────────────────────────────────────────────────────
                    Origin                        Record Type
  Failure Data :     PLNT       LERS-   -   -   -   -   -   -   -   -
  Exposure Data:     PLNT       EXPJ-   -   -   -   -   -   -   -   -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U          Originating Facilities : NNS2-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : U          Include System?  : I   Systems : BE-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y      Subsys. train :
  ──────────────────────────── REFERENCE INFORMATION ────────────────────────
    Document Number :  6380        Detail Reference : TABLE 17
  ──────────────────────────── ADDITIONAL COMMENTS ──────────────────────────


  ───────────────────────────────────────────────────────────────────────────
```

```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

    Component: Pumps, Motor Driven
       Design: Unknown
 Normal State: Normally Standby
 Failure Mode: Fails to Start                          Data Record Number:  22

--------------------------NUCLARR-CALCULATED-RATES------------------------------
   Median:  1.626E-002  Upper Tolerance:  2.039E-002   Aggregation Type: 1
   Mean  : +0.000E+000  Error Factor   :  1.254E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------------
   Number of Failures   :      0         Number of Components  :      3
   Hours Per Component  : ------------   Demand Per Component  :      31
   Total Component Hours: ------------   Total Component Demand: --------

   Probability/Rate     : ------E----    Type          :
   Variance             : ------E----    Units         :
   Standard Deviation   : ------E----    Distribution  :

                          ---Lower---    ---Upper---   -Confidence/Coverage-
   Confidence Bounds    : ------E----    ------E----             -- %
   Tolerance Bounds     : ------E----    ------E----             -- %
        Error Factor    : ------E----       Sided                -- %
--------------------------------------------------------------------------------
 Component          1:
 Applications       2:
                    3:
--------------------------------------------------------------------------------
                  Origin                       Record Type
 Failure Data :   PLNT       LERS-   -   -   -   -   -   -   -   -
 Exposure Data:   PLNT       EXPJ-   -   -   -   -   -   -   -   -

 Data Collection Period:  72 through 78 (YY through YY)

 Include Circuit? : U         Originating Facilities : MNS2-    -    -
 Nuclear Origin?  : Y         Failure Degree    :
 Bayesian Update? : N         Failure Severity  : C
 IRADAP Suitable? : U         Include System?   : I  Systems : BJ-  -  -  -
 Safety Grade?    : U
 Primary Failure? : Y    Subsys. train :
------------------------- REFERENCE INFORMATION --------------------------------
   Document Number :  6380        Detail Reference : TABLE 17
-------------------------- ADDITIONAL COMMENTS ---------------------------------


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```

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

    Component: Pumps, Motor Driven
       Design: Unknown
 Normal State: Normally Standby
 Failure Mode: Fails to Start                        Data Record Number:  23

 ---------------------------NUCLARR-CALCULATED-RATES---------------------------
   Median:  2.413E-002   Upper Tolerance:  3.039E-002   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  1.260E+000

 -----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
   Number of Failures    :       0        Number of Components  :       2
   Hours Per Component   : ------------   Demand Per Component  :      31
   Total Component Hours: ------------    Total Component Demand: --------

   Probability/Rate    : ------E----      Type          :
   Variance            : ------E----      Units         :
   Standard Deviation  : ------E----      Distribution  :

                         ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds   : ------E----      ------E----               -- %
   Tolerance Bounds    : ------E----      ------E----               -- %
         Error Factor  : ------E----         Sided                  -- %

 ------------------------------------------------------------------------------
 Component         1:
 Applications      2:
                   3:
 ------------------------------------------------------------------------------
                 Origin                      Record Type
 Failure Data :   PLNT     LERS-   -   -   -   -   -   -   -   -
 Exposure Data:   PLNT     EXPJ-   -   -   -   -   -   -   -   -

 Data Collection Period:  72 through 78 (YY through YY)

 Include Circuit? : U        Originating Facilities : MNS2-     -     -
 Nuclear Origin?  : Y        Failure Degree    :
 Bayesian Update? : N        Failure Severity : C
 IRADAP Suitable? : U        Include System?  : I  Systems : BO-  -  -  -
 Safety Grade?    : U
 Primary Failure? : Y     Subsys. train :
 ------------------------- REFERENCE INFORMATION ------------------------------
   Document Number :  6380       Detail Reference : TABLE 17
 -------------------------- ADDITIONAL COMMENTS -------------------------------


 ------------------------------------------------------------------------------
```

```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

      Component: Pumps, Motor Driven
         Design: Unknown
   Normal State: Normally Standby
   Failure Mode: Fails to Start                         Data Record Number:  24

 ------------------------NUCLARR-CALCULATED-RATES-------------------------------
    Median:  1.287E-002  Upper Tolerance:  1.611E-002  Aggregation Type: 1
    Mean   : +0.000E+000  Error Factor    :  1.251E+000

 ----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures    :      0         Number of Components  :       2
    Hours Per Component   : ------------   Demand Per Component  :      59
    Total Component Hours: ------------   Total Component Demand: --------

    Probability/Rate    : ------E----      Type          :
    Variance            : ------E----      Units         :
    Standard Deviation  : ------E----      Distribution  :

                          ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----               -- %
    Tolerance Bounds    : ------E----      ------E----               -- %
         Error Factor   : ------E----         Sided                  -- %
 -------------------------------------------------------------------------------
   Component        1:
   Applications     2:
                    3:
 -------------------------------------------------------------------------------
                  Origin                      Record Type
   Failure Data :  PLNT        LERS-   -    -    -    -    -    -    -    -
   Exposure Data:  PLNT        EXPJ-   -    -    -    -    -    -    -    -

   Data Collection Period:  72 through 78 (YY through YY)

   Include Circuit? : U          Originating Facilities : IPS2-    -    -
   Nuclear Origin?  : Y          Failure Degree    :
   Bayesian Update? : N          Failure Severity : C
   IRADAP Suitable? : U          Include System?   : I  Systems : BO-BA-  -BE-
   Safety Grade?    : U
   Primary Failure? : Y       Subsys. train :
 ---------------------------- REFERENCE INFORMATION ----------------------------
    Document Number :  6380        Detail Reference : TABLE 17
 ---------------------------- ADDITIONAL COMMENTS ------------------------------

 -------------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

    Component: Pumps, Motor Driven
       Design: Unknown
 Normal State: Normally Standby
 Failure Mode: Fails to Start                          Data Record Number:  25

-------------------------NUCLARR-CALCULATED-RATES-------------------------
   Median:  8.630E-003   Upper Tolerance:  1.078E-002   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  1.249E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------
   Number of Failures    :       0        Number of Components  :      3
   Hours Per Component   : ------------   Demand Per Component  :     59
   Total Component Hours: ------------    Total Component Demand: --------

   Probability/Rate    : ------E----      Type          :
   Variance            : ------E----      Units         :
   Standard Deviation : ------E----       Distribution :

                          ---Lower---     ---Upper---   -Confidence/Coverage-
   Confidence Bounds  : ------E----     ------E----              -- %
   Tolerance Bounds   : ------E----     ------E----              -- %
         Error Factor : ------E----        Sided                 -- %

--------------------------------------------------------------------------
 Component        1:
 Applications     2:
                  3:
--------------------------------------------------------------------------
                Origin                      Record Type
 Failure Data :  PLNT     LERS-   -   -   -   -   -   -   -   -
 Exposure Data:  PLNT     EXPO-   -   -   -   -   -   -   -   -

 Data Collection Period:  72 through 78 (YY through YY)

 Include Circuit? : U         Originating Facilities : IPS2-    -    -
 Nuclear Origin?  : Y         Failure Degree     :
 Bayesian Update? : N         Failure Severity : C
 IRADAP Suitable? : U         Include System?  : I  Systems : BJ-  -  -  -
 Safety Grade?    : U
 Primary Failure? : Y     Subsys. train :
---------------------------- REFERENCE INFORMATION -----------------------
   Document Number :  6380       Detail Reference : TABLE 17
---------------------------- ADDITIONAL COMMENTS -------------------------

--------------------------------------------------------------------------
```

```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

   Component: Pumps, Motor Driven
      Design: Unknown
Normal State: Normally Standby
Failure Mode: Fails to Start                           Data Record Number:  26

------------------------------NUCLARR-CALCULATED-RATES---------------------------
   Median:  2.350E-002  Upper Tolerance:  7.554E-002  Aggregation Type: 1
   Mean  :  2.000E-002  Error Factor   :  3.214E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
   Number of Failures   :      1          Number of Components  :      2
   Hours Per Component  : ------------    Demand Per Component  :      25
   Total Component Hours: ------------    Total Component Demand: --------

   Probability/Rate   : ------E----       Type         :
   Variance           : ------E----       Units        :
   Standard Deviation : ------E----       Distribution :

                        ----Lower----     ----Upper----    -Confidence/Coverage-
   Confidence Bounds  : ------E----       ------E----              -- %
   Tolerance Bounds   : ------E----       ------E----              -- %
         Error Factor : ------E----          Sided                 -- %

---------------------------------------------------------------------------------
Component          1:
Applications       2:
                   3:
---------------------------------------------------------------------------------
                Origin                          Record Type
Failure Data :   PLNT       LERS-   -   -   -   -   -   -   -   -
Exposure Data:   PLNT       EXPJ-   -   -   -   -   -   -   -   -

Data Collection Period:  72 through 78 (YY through YY)

Include Circuit? : U        Originating Facilities : IPS3-    -    -
Nuclear Origin?  : Y        Failure Degree    :
Bayesian Update? : N        Failure Severity  : C
IRADAP Suitable? : U        Include System?   : I  Systems : BA-  -  -  -
Safety Grade?    : U
Primary Failure? : Y    Subsys. train :
---------------------------- REFERENCE INFORMATION ------------------------------
   Document Number :  6380      Detail Reference : TABLE 17
---------------------------- ADDITIONAL COMMENTS --------------------------------

---------------------------------------------------------------------------------
```

212

MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

Component: Pumps, Motor Driven
Design: Unknown
Normal State: Normally Standby
Failure Mode: Fails to Start
Data Record Number: 27

NUCLARR-CALCULATED-RATES

Median:	4.524E-003	Upper Tolerance:	3.750E-002	Aggregation Type:	1
Mean:	+0.000E+000	Error Factor:	8.290E+000		

REFERENCE-RAW-and-PROBABILITY-DATA

Number of Failures :	0	Number of Components :	2
Hours Per Component :	------------	Demand Per Component :	25
Total Component Hours:	------------	Total Component Demand:	--------

Probability/Rate :	------E----	Type :	
Variance :	------E----	Units :	
Standard Deviation :	------E----	Distribution :	

	Lower	Upper	Confidence/Coverage
Confidence Bounds :	------E----	------E----	-- %
Tolerance Bounds :	------E----	------E----	-- %
Error Factor :	------E----	Sided	-- %

Component Applications
1:
2:
3:

	Origin	Record Type								
Failure Data :	PLNT	LERS-	-	-	-	-	-	-	-	-
Exposure Data:	PLNT	EXPJ-	-	-	-	-	-	-	-	-

Data Collection Period: 72 through 78 (YY through YY)

Include Circuit? :	U	Originating Facilities :	IPS3- - -
Nuclear Origin? :	Y	Failure Degree :	
Bayesian Update? :	N	Failure Severity :	C
IRADAP Suitable? :	U	Include System? :	I Systems : BE- - - -
Safety Grade? :	U		
Primary Failure? :	Y	Subsys. train :	

REFERENCE INFORMATION

Document Number : 6380 Detail Reference : TABLE 17

ADDITIONAL COMMENTS

```
             MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

     Component: Pumps, Motor Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Start                        Data Record Number:  28

 ------------------------NUCLARR-CALCULATED-RATES-------------------------------
    Median:  2.005E-002  Upper Tolerance:  2.520E-002  Aggregation Type: 1
    Mean  : +0.000E+000  Error Factor   :  1.257E+000

 ----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures   :      0        Number of Components   :      3
    Hours Per Component  : ------------  Demand Per Component   :     25
    Total Component Hours: ------------  Total Component Demand: --------

    Probability/Rate    : ------E----    Type         :
    Variance            : ------E----    Units        :
    Standard Deviation  : ------E----    Distribution :

                           ---Lower---    ---Upper---   -Confidence/Coverage-
    Confidence Bounds   : ------E----    ------E----             -- %
    Tolerance Bounds    : ------E----    ------E----             -- %
          Error Factor  : ------E----       Sided                -- %

 ------------------------------------------------------------------------------
  Component          1:
  Applications       2:
                     3:
 ------------------------------------------------------------------------------
                 Origin                         Record Type
  Failure Data :  PLNT     LERS-   -    -    -    -    -    -    -    -
  Exposure Data:  PLNT     EXPJ-   -    -    -    -    -    -    -    -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U        Originating Facilities : IPS3-    -    -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : N        Failure Severity : C
  IRADAP Suitable? : U        Include System?  : I  Systems : BJ-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y     Subsys. train :
 ------------------------- REFERENCE INFORMATION ------------------------------
    Document Number :  6380      Detail Reference : TABLE 17
 -------------------------- ADDITIONAL COMMENTS -------------------------------

 ------------------------------------------------------------------------------
```

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

      Component: Pumps, Motor Driven
         Design: Unknown
   Normal State: Normally Standby
   Failure Mode: Fails to Start                     Data Record Number:  29

  -----------------------NUCLARR-CALCULATED-RATES----------------------------
     Median:  4.524E-003   Upper Tolerance:  3.750E-002   Aggregation Type: 1
     Mean  : +0.000E+000   Error Factor   :  8.290E+000

  ---------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
     Number of Failures    :       0       Number of Components  :      2
     Hours Per Component   : ------------  Demand Per Component  :     25
     Total Component Hours: ------------   Total Component Demand: --------

     Probability/Rate     : ------E----    Type          :
     Variance             : ------E----    Units         :
     Standard Deviation   : ------E----    Distribution  :

                            ---Lower---    ---Upper---    -Confidence/Coverage-
     Confidence Bounds    : ------E----    ------E----              -- %
     Tolerance Bounds     : ------E----    ------E----              -- %
           Error Factor   : ------E----       Sided                 -- %

  ---------------------------------------------------------------------------
   Component            1:
   Applications         2:
                        3:
  ---------------------------------------------------------------------------
                      Origin                     Record Type
   Failure Data :     PLNT      LERS-  -   -   -   -   -   -   -   -
   Exposure Data:     PLNT      EXPJ-  -   -   -   -   -   -   -   -

   Data Collection Period:  72 through 78 (YY through YY)

   Include Circuit? : U       Originating Facilities : IPS3-    -    -
   Nuclear Origin?  : Y       Failure Degree     :
   Bayesian Update? : N       Failure Severity : C
   IRADAP Suitable? : U       Include System?  : I  Systems : BO-  -  -  -
   Safety Grade?    : U
   Primary Failure? : Y    Subsys. train :
  ------------------------- REFERENCE INFORMATION ---------------------------
     Document Number :  6380      Detail Reference : TABLE 17
  ------------------------- ADDITIONAL COMMENTS -----------------------------


  ---------------------------------------------------------------------------
```

```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

    Component: Pumps, Motor Driven
       Design: Unknown
 Normal State: Normally Standby
 Failure Mode: Fails to Start                          Data Record Number:  30

-----------------------------NUCLARR-CALCULATED-RATES-------------------------
   Median:  1.003E-002  Upper Tolerance:  1.254E-002   Aggregation Type: 1
   Mean  : +0.000E+000  Error Factor   :  1.250E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------
   Number of Failures   :      0        Number of Components  :      2
   Hours Per Component  : ------------  Demand Per Component  :     76
   Total Component Hours: ------------  Total Component Demand: --------

   Probability/Rate   : ------E----     Type         :
   Variance           : ------E----     Units        :
   Standard Deviation : ------E----     Distribution :

                         ---Lower---    ---Upper---   -Confidence/Coverage-
   Confidence Bounds  : ------E----    ------E----               -- %
   Tolerance Bounds   : ------E----    ------E----               -- %
         Error Factor : ------E----        Sided                 -- %
-------------------------------------------------------------------------------
 Component         1:
 Applications      2:
                   3:
-------------------------------------------------------------------------------
                  Origin                        Record Type
 Failure Data :    PLNT       LERS-    -    -    -    -    -    -    -    -
 Exposure Data:    PLNT       EXPJ-    -    -    -    -    -    -    -    -

 Data Collection Period:  72 through 78 (YY through YY)

 Include Circuit? : U         Originating Facilities : HNP1-    -    -
 Nuclear Origin?  : Y         Failure Degree    :
 Bayesian Update? : N         Failure Severity : C
 IRADAP Suitable? : U         Include System?  : I  Systems : BO-BJ-  -  -
 Safety Grade?    : U
 Primary Failure? : Y     Subsys. train :
---------------------------- REFERENCE INFORMATION ---------------------------
   Document Number :  6380       Detail Reference : TABLE 17
----------------------------- ADDITIONAL COMMENTS ----------------------------

-------------------------------------------------------------------------------
```

```
       MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

    Component: Pumps, Steam Turbine Driven
       Design: Unknown
 Normal State: Normally Standby
 Failure Mode: Fails to Operate                    Data Record Number:   1

 ------------------------NUCLARR-CALCULATED-RATES--------------------------
   Median:  1.267E-002  Upper Tolerance:  4.136E-002  Aggregation Type: 1
   Mean  :  1.064E-002  Error Factor   :  3.265E+000

 -------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
   Number of Failures   :      1          Number of Components   : ------
   Hours Per Component  : ------------    Demand Per Component   : --------
   Total Component Hours:            94   Total Component Demand: --------

   Probability/Rate   :  1.600E-004       Type           : MEDIAN
   Variance           :  3.500E-006       Units          : F/H
   Standard Deviation : ------E----       Distribution : DISCRETE

                       ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds  : ------E----      ------E----              -- %
   Tolerance Bounds   :  4.100E-006      4.000E-003               90 %
         Error Factor : ------E----         Sided                 -- %

 --------------------------------------------------------------------------
 Component           1: Water, High Purity/Demineralized - Int.
 Applications        2:
                     3:
 --------------------------------------------------------------------------
                 Origin                          Record Type
 Failure Data :   PLNT       PMMR-LERS-INCD-    -    -    -    -    -    -
 Exposure Data:   PLNT       TSTR-PMTR-CRLB-    -    -    -    -    -    -

 Data Collection Period:  75 through 80 (YY through YY)

 Include Circuit? : U        Originating Facilities : NEE3-    -    -
 Nuclear Origin?  : Y        Failure Degree    :
 Bayesian Update? : Y        Failure Severity : C
 IRADAP Suitable? : Y        Include System?   : I  Systems : BA-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : U    Subsys. train :
 ------------------------ REFERENCE INFORMATION ---------------------------
   Document Number : 21281       Detail Reference : 5-21
 ------------------------ ADDITIONAL COMMENTS -----------------------------
 MEAN = 9.90E-04/H

 --------------------------------------------------------------------------
```

```
         MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Pumps, Steam Turbine Driven
      Design: Unknown
Normal State: Normally Standby
Failure Mode: Fails to Run                        Data Record Number:   1

------------------------NUCLARR-CALCULATED-RATES------------------------
  Median:  1.238E-004   Upper Tolerance:  9.860E-004   Aggregation Type: 1
  Mean  : +0.000E+000   Error Factor   :  7.964E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------
  Number of Failures   :      0         Number of Components  : ------
  Hours Per Component  : ------------   Demand Per Component  : --------
  Total Component Hours:          1900  Total Component Demand: --------

  Probability/Rate    :  7.630E-006     Type         : MEAN
  Variance            :  1.200E-009     Units        : F/H
  Standard Deviation  : ------E----     Distribution : DISCRETE

                       ---Lower---     ---Upper---   -Confidence/Coverage-
  Confidence Bounds   : ------E----    ------E----             -- %
  Tolerance Bounds    : ------E----    ------E----             -- %
        Error Factor  : ------E----       Sided                -- %
------------------------------------------------------------------------
Component          1: Water, High Purity/Demineralized - Int.
Applications       2:
                   3:
------------------------------------------------------------------------
               Origin                  Record Type
Failure Data :  PLNT      LERS-CRLB-PMLG-PMTR-DEVR-    -    -    -    -
Exposure Data:  PLNT      MOPR-TSTR-   -    -    -    -    -    -    -

Data Collection Period:  73 through 79 (YY through YY)

Include Circuit? : U         Originating Facilities : ZIS1-ZIS2-    -
Nuclear Origin?  : Y         Failure Degree    :
Bayesian Update? : Y         Failure Severity  : C
IRADAP Suitable? : Y         Include System?   : I  Systems : BA-  -  -  -
Safety Grade?    : U
Primary Failure? : U     Subsys. train :
------------------------- REFERENCE INFORMATION -------------------------
  Document Number : 21381       Detail Reference : 1.5-73
-------------------------- ADDITIONAL COMMENTS --------------------------

------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Steam Turbine Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Run                           Data Record Number:   2

 ------------------------NUCLARR-CALCULATED-RATES-------------------------------
    Median:  3.676E-004   Upper Tolerance:  2.927E-003   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  7.964E+000

 ----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures   :      0        Number of Components   : ------
    Hours Per Component  : ------------  Demand Per Component   : --------
    Total Component Hours:          640  Total Component Demand: --------

    Probability/Rate    :  1.150E-005    Type          : MEAN
    Variance            :  3.990E-009    Units         : F/H
    Standard Deviation  : ------E----    Distribution  : DISCRETE

                          ---Lower---    ---Upper---   -Confidence/Coverage-
    Confidence Bounds   : ------E----    ------E----             -- %
    Tolerance Bounds    : ------E----    ------E----             -- %
          Error Factor  : ------E----       Sided                -- %

 -------------------------------------------------------------------------------
  Component          1: Water, High Purity/Demineralized - Int.
  Applications       2:
                     3:
 -------------------------------------------------------------------------------
                    Origin                    Record Type
  Failure Data :     PLNT      LERS-CRLB-PMLG-PMTR-SOCR-    -    -    -    -
  Exposure Data:     PLNT      MOPR-TSTR-   -    -    -    -    -    -    -

  Data Collection Period:  73 through 79 (YY through YY)

  Include Circuit? : U          Originating Facilities : IPS2-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?   : I  Systems : BA-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y      Subsys. train :
 ------------------------------ REFERENCE INFORMATION --------------------------
     Document Number : 20982        Detail Reference : 1.5-61
 ------------------------------ ADDITIONAL COMMENTS ----------------------------

 -------------------------------------------------------------------------------
```

```
       MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

   Component: Pumps, Steam Turbine Driven
      Design: Unknown
Normal State: Normally Standby
Failure Mode: Fails to Run                          Data Record Number:   3

-------------------------------NUCLARR-CALCULATED-RATES--------------------------------
   Median:  7.988E-005   Upper Tolerance:  2.608E-004   Aggregation Type: 1
   Mean  :  6.709E-005   Error Factor   :  3.265E+000

-----------------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------------
   Number of Failures    :      1          Number of Components  :      1
   Hours Per Component   :        14906    Demand Per Component  : --------
   Total Component Hours: ------------     Total Component Demand: --------

   Probability/Rate     : ------E----      Type         :
   Variance             : ------E----      Units        :
   Standard Deviation   : ------E----      Distribution :

                          ---Lower---     ---Upper---    -Confidence/Coverage-
   Confidence Bounds    : ------E----     ------E----              -- %
   Tolerance Bounds     : ------E----     ------E----              -- %
         Error Factor   : ------E----        Sided                 -- %

---------------------------------------------------------------------------------------
Component            1:
Applications         2:
                     3:
---------------------------------------------------------------------------------------
                 Origin                        Record Type
Failure Data :   PLNT       LERS-   -    -    -    -    -    -    -    -
Exposure Data:   PLNT       TCRT-   -    -    -    -    -    -    -    -

Data Collection Period:  72 through 78 (YY through YY)

Include Circuit? : U        Originating Facilities : MNS2-    -    -
Nuclear Origin?  : Y        Failure Degree    :
Bayesian Update? : N        Failure Severity : C
IRADAP Suitable? : U        Include System?  : I  Systems : BA-  -  -  -
Safety Grade?    : U
Primary Failure? : Y     Subsys. train :

-------------------------------- REFERENCE INFORMATION --------------------------------
   Document Number :  6380       Detail Reference : TABLE 17
--------------------------------- ADDITIONAL COMMENTS ---------------------------------


---------------------------------------------------------------------------------------
```

```
             MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

     Component: Pumps, Steam Turbine Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Run                          Data Record Number:   4

--------------------------NUCLARR-CALCULATED-RATES-------------------------------
    Median: 5.568E-005   Upper Tolerance:  1.818E-004   Aggregation Type: 1
    Mean  : 4.676E-005   Error Factor   :  3.265E+000

------------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures    :      1         Number of Components   :      1
    Hours Per Component   :        21387   Demand Per Component   : --------
    Total Component Hours: ------------    Total Component Demand: --------

    Probability/Rate    : ------E----      Type          :
    Variance            : ------E----      Units         :
    Standard Deviation  : ------E----      Distribution  :

                          ---Lower---     ---Upper---    -Confidence/Coverage-
    Confidence Bounds   : ------E----     ------E----              -- %
    Tolerance Bounds    : ------E----     ------E----              -- %
          Error Factor  : ------E----         Sided                -- %

---------------------------------------------------------------------------------
  Component        1:
  Applications     2:
                   3:
---------------------------------------------------------------------------------
                  Origin                      Record Type
  Failure Data :   PLNT       LERS-   -   -   -   -   -   -   -   -
  Exposure Data:   PLNT       TCRT-   -   -   -   -   -   -   -   -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U         Originating Facilities : IPS2-   -   -
  Nuclear Origin?  : Y         Failure Degree    :
  Bayesian Update? : N         Failure Severity : C
  IRADAP Suitable? : U         Include System?  : I   Systems : BA-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y     Subsys. train :

------------------------------- REFERENCE INFORMATION ----------------------------
    Document Number :  6380        Detail Reference : TABLE 17

--------------------------------- ADDITIONAL COMMENTS ----------------------------


---------------------------------------------------------------------------------
```

```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

     Component: Pumps, Steam Turbine Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Run                              Data Record Number:   5

─────────────────────────NUCLARR-CALCULATED-RATES──────────────────────────
   Median:  2.012E-005   Upper Tolerance:  1.602E-004   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  7.964E+000

─────────────────────REFERENCE-RAW-and-PROBABILITY-DATA────────────────────
   Number of Failures   :      0      Number of Components  :       1
   Hours Per Component  :      11694  Demand Per Component  : --------
   Total Component Hours: ------------ Total Component Demand: --------

   Probability/Rate   : ------E----      Type         :
   Variance           : ------E----      Units        :
   Standard Deviation : ------E----      Distribution :

                        ───Lower───    ───Upper───   -Confidence/Coverage-
   Confidence Bounds  : ------E----    ------E----            -- %
   Tolerance Bounds   : ------E----    ------E----            -- %
         Error Factor : ------E----        Sided              -- %
────────────────────────────────────────────────────────────────────────────
 Component          1:
 Applications       2:
                    3:
────────────────────────────────────────────────────────────────────────────
                 Origin                     Record Type
 Failure Data :   PLNT       LERS-   -   -   -   -   -   -   -   -
 Exposure Data:   PLNT       TCRT-   -   -   -   -   -   -   -   -

 Data Collection Period:  72 through 78 (YY through YY)

 Include Circuit? : U         Originating Facilities : IPS3-    -    -
 Nuclear Origin?  : Y         Failure Degree    :
 Bayesian Update? : N         Failure Severity : C
 IRADAP Suitable? : U         Include System?  : I  Systems : BA-  -  -  -
 Safety Grade?    : U
 Primary Failure? : Y    Subsys. train :
────────────────────────── REFERENCE INFORMATION ───────────────────────────
   Document Number :  6380       Detail Reference : TABLE 17
─────────────────────────── ADDITIONAL COMMENTS ────────────────────────────

────────────────────────────────────────────────────────────────────────────
```

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

     Component: Pumps, Steam Turbine Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Run                          Data Record Number:   6

-------------------------NUCLARR-CALCULATED-RATES------------------------------
   Median:  2.581E-006   Upper Tolerance:  2.055E-005   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  7.964E+000

-------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------------
   Number of Failures    :      0        Number of Components  :      2
   Hours Per Component   :       45574   Demand Per Component  : --------
   Total Component Hours: ------------   Total Component Demand: --------

   Probability/Rate    : ------E----     Type         :
   Variance            : ------E----     Units        :
   Standard Deviation  : ------E----     Distribution :

                        ----Lower-----   -----Upper-----   -Confidence/Coverage-
   Confidence Bounds   : ------E----     ------E----                 -- %
   Tolerance Bounds    : ------E----     ------E----                 -- %
         Error Factor  : ------E----        Sided                    -- %

-------------------------------------------------------------------------------
  Component         1:
  Applications      2:
                    3:
-------------------------------------------------------------------------------
                Origin                          Record Type
  Failure Data :  PLNT      LERS-   -    -    -    -    -    -    -    -
  Exposure Data:  PLNT      TCRT-   -    -    -    -    -    -    -    -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U          Originating Facilities : HNP1-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : U          Include System?  : I  Systems : BA-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y     Subsys. train :

-------------------------- REFERENCE INFORMATION ------------------------------
     Document Number :  6380       Detail Reference : TABLE 17

---------------------------- ADDITIONAL COMMENTS ------------------------------


-------------------------------------------------------------------------------
```

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Pumps, Steam Turbine Driven
      Design: Unknown
Normal State: Normally Standby
Failure Mode: Fails to Start                         Data Record Number:   1

─────────────────────NUCLARR-CALCULATED-RATES────────────────────────────────
  Median:  5.444E-002  Upper Tolerance:  9.647E-002  Aggregation Type: 1
  Mean  :  5.310E-002  Error Factor   :  1.772E+000

──────────────────REFERENCE-RAW-and-PROBABILITY-DATA─────────────────────────
  Number of Failures    :      6          Number of Components  : ------
  Hours Per Component   : ------------    Demand Per Component  : --------
  Total Component Hours: ------------     Total Component Demand:      113

  Probability/Rate    :  2.900E-002       Type         : MEDIAN
  Variance            :  2.800E-004       Units        : F/D
  Standard Deviation : ------E----        Distribution : DISCRETE

                      ───Lower───    ───Upper───   -Confidence/Coverage-
  Confidence Bounds  : ------E----    ------E----              -- %
  Tolerance Bounds   :  1.200E-002     5.800E-002              90 %
        Error Factor : ------E----       Sided                 -- %

──────────────────────────────────────────────────────────────────────────────
Component          1: Water, High Purity/Demineralized - Int.
Applications       2:
                   3:
──────────────────────────────────────────────────────────────────────────────
                 Origin                       Record Type
Failure Data :   PLNT       PMWR-LERS-INCD-   -   -   -   -   -   -
Exposure Data:   PLNT       TSTR-PMTR-CRLB-   -   -   -   -   -   -

Data Collection Period:  75 through 80 (YY through YY)

Include Circuit? : U          Originating Facilities : NEE3-    -    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : Y          Failure Severity : C
IRADAP Suitable? : Y          Include System?  : I  Systems : BA-  -  -  -
Safety Grade?    : Y
Primary Failure? : U     Subsys. train :

───────────────────────────── REFERENCE INFORMATION ──────────────────────────
  Document Number : 21281        Detail Reference : 5-21

───────────────────────────── ADDITIONAL COMMENTS ────────────────────────────
MEAN = 3.80E-02/D

──────────────────────────────────────────────────────────────────────────────
```

```
         MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Pumps, Steam Turbine Driven
         Design: Unknown
   Normal State: Normally Standby
   Failure Mode: Fails to Start                      Data Record Number:   2

 ----------------------------NUCLARR-CALCULATED-RATES---------------------------
     Median:  1.310E-002  Upper Tolerance:  1.054E-001   Aggregation Type: 1
     Mean   : +0.000E+000  Error Factor   :  8.044E+000

 ----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
     Number of Failures   :       0          Number of Components  : ------
     Hours Per Component  : ------------     Demand Per Component  : --------
     Total Component Hours: ------------     Total Component Demand:      17

     Probability/Rate    :  2.010E-003       Type         : MEAN
     Variance            :  2.500E-005       Units        : F/D
     Standard Deviation  : ------E----       Distribution : DISCRETE

                           ----Lower----   ----Upper----   -Confidence/Coverage-
     Confidence Bounds   : ------E----     ------E----              -- %
     Tolerance Bounds    : ------E----     ------E----              -- %
           Error Factor  : ------E----        Sided                 -- %

 -------------------------------------------------------------------------------
   Component          1: Water, High Purity/Demineralized - Int.
   Applications       2:
                      3:
 -------------------------------------------------------------------------------
                    Origin                  Record Type
   Failure Data :   PLNT       LERS-CRLB-PMLG-PMTR-SOCR-   -   -   -   -
   Exposure Data:   PLNT       TSTR-   -   -   -   -   -   -   -   -   -

   Data Collection Period:  73 through 79 (YY through YY)

   Include Circuit? : U         Originating Facilities : IPS2-   -   -
   Nuclear Origin?  : Y         Failure Degree    :
   Bayesian Update? : Y         Failure Severity : C
   IRADAP Suitable? : Y         Include System?  : I   Systems : BA-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : Y      Subsys. train :
 ---------------------------- REFERENCE INFORMATION ----------------------------
     Document Number : 20982        Detail Reference : 1.5-59
 ----------------------------- ADDITIONAL COMMENTS -----------------------------


 -------------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Pumps, Steam Turbine Driven
         Design: Unknown
   Normal State: Normally Standby
   Failure Mode: Fails to Start                        Data Record Number:   3

  ------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  4.539E-003  Upper Tolerance:  1.151E-002  Aggregation Type: 1
    Mean  :  4.175E-003  Error Factor   :  2.535E+000

  ------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures    :     2          Number of Components  : ------
    Hours Per Component   : ------------   Demand Per Component  : --------
    Total Component Hours: ------------    Total Component Demand:      479

    Probability/Rate   :  1.320E-002       Type          : MEAN
    Variance           :  2.580E-005       Units         : F/D
    Standard Deviation : ------E----       Distribution  : BETA

                         ----Lower----   ----Upper----   -Confidence/Coverage-
    Confidence Bounds  : ------E----     ------E----               -- %
    Tolerance Bounds   : ------E----     ------E----               -- %
          Error Factor : ------E----        Sided                  -- %

  ---------------------------------------------------------------------------
   Component          1: Water, High Purity/Demineralized - Int.
   Applications       2:
                      3:
  ---------------------------------------------------------------------------
                   Origin                       Record Type
   Failure Data :   PLNT      UTDB-LERS-INCD-MOPR-    -    -    -    -    -
   Exposure Data:   PLNT      SSLB-SURV-JOBO-PMWR-    -    -    -    -    -

   Data Collection Period:  74 through 83 (YY through YY)

   Include Circuit? : U          Originating Facilities : HNP1-    -    -
   Nuclear Origin?  : Y          Failure Degree    :
   Bayesian Update? : Y          Failure Severity : C
   IRADAP Suitable? : Y          Include System?  : I  Systems : BA-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : U     Subsys. train :

  ---------------------------- REFERENCE INFORMATION ------------------------
     Document Number : 20585       Detail Reference : 4.1-5,11

  ------------------------------ ADDITIONAL COMMENTS ------------------------


  ---------------------------------------------------------------------------
```

```
MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/09

    Component: Pumps, Steam Turbine Driven
       Design: Unknown
 Normal State: Normally Standby
 Failure Mode: Fails to Start                         Data Record Number:   4

---------------------------NUCLARR-CALCULATED-RATES---------------------------
   Median:  3.834E-003   Upper Tolerance:  3.190E-002   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  8.319E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
   Number of Failures   :       0        Number of Components   :       1
   Hours Per Component  : ------------   Demand Per Component   :      59
   Total Component Hours: ------------   Total Component Demand: --------

   Probability/Rate     : ------E----    Type         :
   Variance             : ------E----    Units        :
   Standard Deviation   : ------E----    Distribution :

                         ----Lower----   ----Upper----   -Confidence/Coverage-
   Confidence Bounds    : ------E----    ------E----              -- %
   Tolerance Bounds     : ------E----    ------E----              -- %
         Error Factor   : ------E----       Sided                 -- %
-------------------------------------------------------------------------------
 Component           1:
 Applications        2:
                     3:
-------------------------------------------------------------------------------
                 Origin                        Record Type
 Failure Data :   PLNT        LERS-   -   -   -   -   -   -   -   -
 Exposure Data:   PLNT        EXPJ-   -   -   -   -   -   -   -   -

 Data Collection Period:  72 through 78 (YY through YY)

 Include Circuit? : U         Originating Facilities : IPS2-    -    -
 Nuclear Origin?  : Y         Failure Degree    :
 Bayesian Update? : N         Failure Severity : C
 IRADAP Suitable? : U         Include System?  : I   Systems : BA-  -  -  -
 Safety Grade?    : U
 Primary Failure? : Y     Subsys. train :
------------------------------ REFERENCE INFORMATION ---------------------------
   Document Number :  6380        Detail Reference : TABLE 17
------------------------------ ADDITIONAL COMMENTS -----------------------------


-------------------------------------------------------------------------------
```

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

    Component: Pumps, Steam Turbine Driven
       Design: Unknown
 Normal State: Normally Standby
 Failure Mode: Fails to Start                         Data Record Number:   5

-----------------------NUCLARR-CALCULATED-RATES-------------------------------
   Median:  4.668E-002  Upper Tolerance:  1.461E-001  Aggregation Type: 1
   Mean  :  4.000E-002  Error Factor   :  3.129E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
   Number of Failures   :       1         Number of Components  :       1
   Hours Per Component  : ------------    Demand Per Component  :      25
   Total Component Hours: ------------    Total Component Demand: --------

   Probability/Rate    : ------E----      Type          :  *
   Variance            : ------E----      Units         :
   Standard Deviation  : ------E----      Distribution  :

                         ---Lower---    ---Upper---   -Confidence/Coverage-
   Confidence Bounds   : ------E----    ------E----               -- %
   Tolerance Bounds    : ------E----    ------E----               -- %
         Error Factor  : ------E----       Sided                  -- %

------------------------------------------------------------------------------
 Component          1:
 Applications       2:
                    3:
------------------------------------------------------------------------------
                Origin                         Record Type
 Failure Data :  PLNT       LERS-   -    -    -    -    -    -    -    -
 Exposure Data:  PLNT       EXPJ-   -    -    -    -    -    -    -    -

 Data Collection Period:  72 through 78 (YY through YY)

 Include Circuit? : U          Originating Facilities : IPS3-    -    -
 Nuclear Origin?  : Y          Failure Degree    :
 Bayesian Update? : N          Failure Severity : C
 IRADAP Suitable? : U          Include System?  : I  Systems : BA-  -  -  -
 Safety Grade?    : U
 Primary Failure? : Y      Subsys. train :

------------------------- REFERENCE INFORMATION ------------------------------
   Document Number :  6380       Detail Reference : TABLE 17

-------------------------- ADDITIONAL COMMENTS -------------------------------


------------------------------------------------------------------------------
```

```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/11

     Component: Pumps, Steam Turbine Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Start                          Data Record Number:   6

---------------------------NUCLARR-CALCULATED-RATES--------------------------
   Median:  1.003E-002  Upper Tolerance:  1.254E-002   Aggregation Type: 1
   Mean   : +0.000E+000  Error Factor    :  1.250E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
   Number of Failures    :      0       Number of Components   :      2
   Hours Per Component   : ------------  Demand Per Component   :     76
   Total Component Hours: ------------  Total Component Demand: --------

   Probability/Rate    : ------E----     Type         :
   Variance            : ------E----     Units        :
   Standard Deviation  : ------E----     Distribution :

                         ---Lower---     ---Upper---   -Confidence/Coverage-
   Confidence Bounds   : ------E----     ------E----             -- %
   Tolerance Bounds    : ------E----     ------E----             -- %
         Error Factor  : ------E----        Sided                -- %
-----------------------------------------------------------------------------
  Component          1:
  Applications       2:
                     3:
-----------------------------------------------------------------------------
                   Origin                          Record Type
  Failure Data :   PLNT       LERS-    -    -    -    -    -    -    -    -
  Exposure Data:   PLNT       EXPJ-    -    -    -    -    -    -    -    -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U         Originating Facilities : HNP1-    -    -
  Nuclear Origin?  : Y         Failure Degree     :
  Bayesian Update? : N         Failure Severity : C
  IRADAP Suitable? : U         Include System?   : I   Systems : BA-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y     Subsys. train :
------------------------------ REFERENCE INFORMATION ------------------------
     Document Number :  6380        Detail Reference : TABLE 17
------------------------------- ADDITIONAL COMMENTS -------------------------

-----------------------------------------------------------------------------
```

```
             MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/03/23

     Component: Pumps, Steam Turbine Driven
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Start                          Data Record Number:   7

 ---------------------------NUCLARR-CALCULATED-RATES----------------------------
    Median:  7.262E-003   Upper Tolerance:  5.961E-002   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor    :  8.208E+000

 -----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures    :       0       Number of Components  :       1
    Hours Per Component   : ------------  Demand Per Component  :      31
    Total Component Hours: ------------   Total Component Demand: --------

    Probability/Rate    : ------E----     Type         :
    Variance            : ------E----     Units        :
    Standard Deviation : ------E----      Distribution :

                          ---Lower---     ---Upper---    -Confidence/Coverage-
    Confidence Bounds  : ------E----      ------E----              -- %
    Tolerance Bounds   : ------E----      ------E----              -- %
          Error Factor : ------E----         Sided                 -- %

 --------------------------------------------------------------------------------
  Component          1:
  Applications       2:
                     3:
 --------------------------------------------------------------------------------
                   Origin                            Record Type
  Failure Data :    PLNT      LERS-   -    -    -    -    -    -    -    -
  Exposure Data:    PLNT      EXPJ-   -    -    -    -    -    -    -    -

  Data Collection Period:  72 through 78 (YY through YY)

  Include Circuit? : U         Originating Facilities : MNS2-    -    -
  Nuclear Origin?  : Y         Failure Degree    :
  Bayesian Update? : U         Failure Severity : C
  IRADAP Suitable? : U         Include System?  : I  Systems : BA-  -  -  -
  Safety Grade?    : U
  Primary Failure? : U    Subsys. train :
 ---------------------------- REFERENCE INFORMATION -----------------------------
    Document Number :  6380       Detail Reference : TABLE 17
 ----------------------------- ADDITIONAL COMMENTS ------------------------------

 --------------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

    Component: Pumps, Unknown Driver
       Design: Unknown
 Normal State: Normally Running
 Failure Mode: Fails to Run                          Data Record Number:   1

-------------------------NUCLARR-CALCULATED-RATES----------------------------
   Median:  6.837E-005  Upper Tolerance:  1.100E-004  Aggregation Type: 1
   Mean  :  6.693E-005  Error Factor   :  1.609E+000

------------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------
   Number of Failures   :      8         Number of Components  : ------
   Hours Per Component  : ------------   Demand Per Component  : --------
   Total Component Hours:        119520  Total Component Demand: --------

   Probability/Rate    :  6.690E-005     Type         : MEAN
   Variance            : ------E----     Units        : F/H
   Standard Deviation  : ------E----     Distribution : GAMMA

                        ---Lower---    ---Upper---    -Confidence/Coverage-
   Confidence Bounds   :  2.000E-005    1.100E-004            90 %
   Tolerance Bounds    : ------E----   ------E----            -- %
         Error Factor  : ------E----      Sided               -- %

-----------------------------------------------------------------------------
 Component           1: Water, High Purity/Demineralized - Int.
 Applications        2:
                     3:
-----------------------------------------------------------------------------
                  Origin                     Record Type
 Failure Data :   PLNT      PMLG-CRLB-SURV-LERS-DEVR-OTHR-    -    -    -
 Exposure Data:   PLNT      CRLB-SURV-   -    -    -    -    -    -    -

 Data Collection Period:  70 through 79 (YY through YY)

 Include Circuit? : U         Originating Facilities : BRP1-    -    -
 Nuclear Origin?  : Y         Failure Degree     :
 Bayesian Update? : N         Failure Severity : C
 IRADAP Suitable? : Y         Include System?  : I  Systems : SJ-  -  -  -
 Safety Grade?    : N
 Primary Failure? : U     Subsys. train :
----------------------------- REFERENCE INFORMATION -------------------------
    Document Number : 20081        Detail Reference : III-10
------------------------------ ADDITIONAL COMMENTS --------------------------
 FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP.

-----------------------------------------------------------------------------
```

```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Pumps, Unknown Driver
      Design: Unknown
Normal State: Normally Running
Failure Mode: Fails to Run                              Data Record Number:   2

-------------------------NUCLARR-CALCULATED-RATES--------------------------
   Median:  3.095E-005   Upper Tolerance:  2.465E-004   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  7.964E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------
   Number of Failures   :      0        Number of Components   : ------
   Hours Per Component  : ------------  Demand Per Component   : --------
   Total Component Hours:         7600  Total Component Demand: --------

   Probability/Rate   :  1.760E-006     Type         : MEAN
   Variance           :  9.620E-012     Units        : F/H
   Standard Deviation : ------E----     Distribution : DISCRETE

                        ----Lower----   ----Upper----  -Confidence/Coverage-
   Confidence Bounds  : ------E----     ------E----               -- %
   Tolerance Bounds   : ------E----     ------E----               -- %
        Error Factor  : ------E----        Sided                  -- %

---------------------------------------------------------------------------
Component          1: Water, High Purity/Demineralized - Int.
Applications       2:
                   3:
---------------------------------------------------------------------------
                 Origin                     Record Type
Failure Data :    PLNT      LERS-CRLB-PMLG-PMTR-DEVR-    -    -    -    -
Exposure Data:    PLNT      MOPR-TSTR-   -    -    -    -    -    -    -

Data Collection Period:  73 through 79 (YY through YY)

Include Circuit? : U          Originating Facilities : ZIS1-ZIS2-    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : Y          Failure Severity : C
IRADAP Suitable? : Y          Include System?  : I  Systems : CC-  -  -  -
Safety Grade?    : N
Primary Failure? : U     Subsys. train :

------------------------- REFERENCE INFORMATION ---------------------------
   Document Number : 21381       Detail Reference : 1.5-73

-------------------------- ADDITIONAL COMMENTS ----------------------------


---------------------------------------------------------------------------
```

232

```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Pumps, Unknown Driver
         Design: Unknown
   Normal State: Normally Running
   Failure Mode: Fails to Run                              Data Record Number:   3

-----------------------------NUCLARR-CALCULATED-RATES-----------------------------
     Median:  1.548E-006   Upper Tolerance:  1.233E-005   Aggregation Type: 1
     Mean  : +0.000E+000   Error Factor   :  7.964E+000

-------------------------REFERENCE-RAW and-PROBABILITY-DATA-----------------------
     Number of Failures    :       0        Number of Components  : ------
     Hours Per Component   : ------------   Demand Per Component  : --------
     Total Component Hours:       152000    Total Component Demand: --------

     Probability/Rate   :  1.320E-006       Type          : MEAN
     Variance           :  3.740E-012       Units         : F/H
     Standard Deviation : ------E----       Distribution  : DISCRETE

                          ----Lower----     ----Upper----   -Confidence/Coverage-
     Confidence Bounds  : ------E----       ------E----              -- %
     Tolerance Bounds   : ------E----       ------E----              -- %
           Error Factor : ------E----          Sided                 -- %

---------------------------------------------------------------------------------
   Component          1: Water, High Purity/Demineralized - Int.
   Applications       2:
                      3:
---------------------------------------------------------------------------------
                   Origin                   Record Type
   Failure Data :  PLNT      LERS-CRLB-PMLG-PMTR-DEVR-    -    -    -    -
   Exposure Data:  PLNT      MOPR-TSTR-    -    -    -    -    -    -    -

   Data Collection Period:  73 through 79 (YY through YY)

   Include Circuit? : U          Originating Facilities : ZIS1-ZIS2-    -
   Nuclear Origin?  : Y          Failure Degree    :
   Bayesian Update? : Y          Failure Severity  : C
   IRADAP Suitable? : Y          Include System?   : I  Systems : CC-   -   -   -
   Safety Grade?    : N
   Primary Failure? : U     Subsys. train :

----------------------------- REFERENCE INFORMATION ------------------------------
     Document Number : 21381        Detail Reference : 1.5-73

------------------------------ ADDITIONAL COMMENTS -------------------------------


---------------------------------------------------------------------------------
```

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

    Component: Pumps, Unknown Driver
       Design: Unknown
 Normal State: Normally Running
 Failure Mode: Fails to Run                            Data Record Number:   4

 ----------------------------NUCLARR-CALCULATED-RATES-----------------------------
   Median:  7.842E-002  Upper Tolerance:  6.245E-001   Aggregation Type: 1
   Mean  : +0.000E+000  Error Factor    :  7.964E+000

 -------------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
   Number of Failures   :      0         Number of Components   : ------
   Hours Per Component  : ------------   Demand Per Component   : --------
   Total Component Hours:            3   Total Component Demand: --------

   Probability/Rate   :  1.950E-005      Type         : MEAN
   Variance           :  1.600E-007      Units        : F/H
   Standard Deviation : ------E----      Distribution : DISCRETE

                        ----Lower----    ----Upper----  -Confidence/Coverage-
   Confidence Bounds  : ------E----      ------E----               -- %
   Tolerance Bounds   : ------E----      ------E----               -- %
        Error Factor  : ------E----         Sided                  -- %

 ----------------------------------------------------------------------------------
 Component            1: Water, High Purity/Demineralized - Int.
 Applications         2:
                      3:
 ----------------------------------------------------------------------------------
                   Origin                     Record Type
 Failure Data :     PLNT       LERS-CRLB-PMLG-PMTR-SOCR-    -    -    -    -
 Exposure Data:     PLNT       MOPR-TSTR-   -    -    -    -    -    -    -    -

 Data Collection Period:  73 through 79 (YY through YY)

 Include Circuit? : U          Originating Facilities : IPS2-    -    -
 Nuclear Origin?  : Y          Failure Degree    :
 Bayesian Update? : Y          Failure Severity  : C
 IRADAP Suitable? : Y          Include System?   : I   Systems : AB-   -   -   -
 Safety Grade?    : N
 Primary Failure? : Y     Subsys. train :

 ------------------------------ REFERENCE INFORMATION -----------------------------
    Document Number : 20982        Detail Reference : 1.5-60

 ------------------------------- ADDITIONAL COMMENTS ------------------------------



 ----------------------------------------------------------------------------------
```

```
         MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Unknown Driver
        Design: Unknown
  Normal State: Normally Running
  Failure Mode: Fails to Run                            Data Record Number:   5

 ----------------------NUCLARR-CALCULATED-RATES------------------------------
    Median:  2.138E-006  Upper Tolerance:  1.750E-005   Aggregation Type: 1
    Mean  : +0.000E+000  Error Factor   :  8.185E+000

 -------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures   :      0          Number of Components  : ------
    Hours Per Component  : ------------    Demand Per Component  : --------
    Total Component Hours:        110029   Total Component Demand: --------

    Probability/Rate    :  2.460E-006      Type         : MEAN
    Variance            :  1.370E-011      Units        : F/H
    Standard Deviation : ------E----       Distribution : GAMMA

                         ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----       1.750E-005              95 %
    Tolerance Bounds    : ------E----      -------E----             -- %
          Error Factor  : ------E----         Sided                 -- %
 ----------------------------------------------------------------------------
  Component          1: Water, High Purity/Demineralized - Int.
  Applications       2:
                     3:
 ----------------------------------------------------------------------------
                  Origin                    Record Type
  Failure Data :   PLNT      UTDB-LERS-PMLG-SSLB-   -   -   -   -   -
  Exposure Data:   PLNT      DCCN-PMTR-RHLG-   -   -   -   -   -   -

  Data Collection Period:  71 through 84 (YY through YY)

  Include Circuit? : U         Originating Facilities : MNS1-    -    -
  Nuclear Origin?  : Y         Failure Degree    :
  Bayesian Update? : Y         Failure Severity : C
  IRADAP Suitable? : Y         Include System?  : I  Systems : SJ-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U    Subsys. train :
 ------------------------ REFERENCE INFORMATION -----------------------------
    Document Number : 21185       Detail Reference : 3.1-7,13
 ------------------------- ADDITIONAL COMMENTS ------------------------------


 ----------------------------------------------------------------------------
```

```
MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Pumps, Unknown Driver
      Design: Unknown
Normal State: Normally Standby
Failure Mode: Fails to Run                         Data Record Number:   1

------------------------NUCLARR-CALCULATED-RATES--------------------------
  Median:  1.342E-001   Upper Tolerance:  2.429E-001   Aggregation Type: 1
  Mean  :  1.304E-001   Error Factor   :  1.811E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------
  Number of Failures   :      6          Number of Components  : ------
  Hours Per Component  : ------------    Demand Per Component  : --------
  Total Component Hours:            46   Total Component Demand: --------

  Probability/Rate   :  1.550E-005       Type         : MEAN
  Variance           :  2.960E-008       Units        : F/H
  Standard Deviation : ------E----       Distribution : DISCRETE

                       ----Lower----   ----Upper----   -Confidence/Coverage-
  Confidence Bounds  : ------E----     ------E----              -- %
  Tolerance Bounds   : ------E----     ------E----              -- %
       Error Factor  : ------E----        Sided                 -- %
--------------------------------------------------------------------------
Component          1: Water, Borated Internal Environment
Applications       2:
                   3:
--------------------------------------------------------------------------
                Origin                        Record Type
Failure Data :   PLNT      LERS-CRLB-PMLG-PMTR-DEVR-    -    -    -    -
Exposure Data:   PLNT      MOPR-TSTR-    -    -    -    -    -    -    -

Data Collection Period:  73 through 79 (YY through YY)

Include Circuit? : U          Originating Facilities : ZIS1-ZIS2-    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : Y          Failure Severity  : C
IRADAP Suitable? : Y          Include System?   : I  Systems : BP-BQ-  -  -
Safety Grade?    : Y
Primary Failure? : U    Subsys. train :

------------------------- REFERENCE INFORMATION --------------------------
   Document Number : 21381       Detail Reference : 1.5-73

-------------------------- ADDITIONAL COMMENTS ---------------------------


--------------------------------------------------------------------------
```

236

```
             MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Pumps, Unknown Driver
         Design: Unknown
   Normal State: Normally Standby
   Failure Mode: Fails to Run                            Data Record Number:   2

----------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  7.239E-006   Upper Tolerance:  5.764E-005   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  7.964E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
    Number of Failures     :     0        Number of Components  : ------
    Hours Per Component    : ------------ Demand Per Component  : --------
    Total Component Hours:         32500  Total Component Demand: --------

    Probability/Rate     :  2.530E-006    Type          : MEAN
    Variance             :  3.390E-011    Units         : F/H
    Standard Deviation : ------E----      Distribution : DISCRETE

                          ---Lower---     ---Upper---    -Confidence/Coverage-
    Confidence Bounds    : ------E----    ------E----                -- %
    Tolerance Bounds     : ------E----    ------E----                -- %
           Error Factor : ------E----        Sided                   -- %

-------------------------------------------------------------------------------
   Component            1: Water, Borated Internal Environment
   Applications         2:
                        3:
-------------------------------------------------------------------------------
                    Origin                   Record Type
   Failure Data :   PLNT      LERS-CRLB-PMLG-PMTR-DEVR-    -    -    -    -
   Exposure Data:   PLNT      MOPR-TSTR-    -    -    -    -    -    -    -

   Data Collection Period:  73 through 79 (YY through YY)

   Include Circuit? : U        Originating Facilities : ZIS1-ZIS2-    -
   Nuclear Origin?  : Y        Failure Degree    :
   Bayesian Update? : Y        Failure Severity : C
   IRADAP Suitable? : Y        Include System?   : I  Systems : CI-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : U     Subsys. train :

--------------------------- REFERENCE INFORMATION -----------------------------
     Document Number : 21381        Detail Reference : 1.5-73
---------------------------- ADDITIONAL COMMENTS ------------------------------


-------------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Pumps, Unknown Driver
        Design: Unknown
  Normal State: Normally Standby
  Failure Mode: Fails to Run                         Data Record Number:   3

-------------------------NUCLARR-CALCULATED-RATES-----------------------------
   Median:  2.801E-003   Upper Tolerance:  2.230E-002   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  7.964E+000

-------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------------
   Number of Failures     :       0        Number of Components   : ------
   Hours Per Component    : ------------   Demand Per Component   : --------
   Total Component Hours:             84   Total Component Demand: --------

   Probability/Rate    :  1.590E-005       Type          : MEAN
   Variance            :  1.610E-008       Units         : F/H
   Standard Deviation  : ------E----       Distribution  : DISCRETE

                        ---Lower---     ---Upper---    -Confidence/Coverage-
   Confidence Bounds   : ------E----    ------E----               -- %
   Tolerance Bounds    : ------E----    ------E----               -- %
        Error Factor   : ------E----       Sided                  -- %

------------------------------------------------------------------------------
  Component          1: Water, Borated Internal Environment
  Applications       2:
                     3:
------------------------------------------------------------------------------
                  Origin                    Record Type
  Failure Data :   PLNT      LERS-CRLB-PMLG-PMTR-SOCR-   -    -    -    -
  Exposure Data:   PLNT      MOPR-TSTR-   -    -    -    -    -    -    -

  Data Collection Period:  73 through 79 (YY through YY)

  Include Circuit? : U        Originating Facilities : IPS2-    -    -
  Nuclear Origin?  : Y        Failure Degree     :
  Bayesian Update? : Y        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I   Systems : BP-BQ-  -  -
  Safety Grade?    : Y
  Primary Failure? : Y    Subsys. train :

------------------------- REFERENCE INFORMATION -------------------------------
    Document Number : 20982       Detail Reference : 1.5-60

------------------------- ADDITIONAL COMMENTS ---------------------------------


------------------------------------------------------------------------------
```

```
       MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Pumps, Unknown Driver
      Design: Unknown
Normal State: Normally Standby
Failure Mode: Fails to Run                         Data Record Number:   4

---------------------------NUCLARR-CALCULATED-RATES---------------------------
  Median:  4.357E-003   Upper Tolerance:  3.469E-002   Aggregation Type: 1
  Mean  : +0.000E+000   Error Factor   :  7.964E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
  Number of Failures    :       0        Number of Components  : ------
  Hours Per Component   : ------------   Demand Per Component  : --------
  Total Component Hours:             54   Total Component Demand: --------

  Probability/Rate   :  1.650E-005       Type          : MEAN
  Variance           :  2.180E-008       Units         : F/H
  Standard Deviation : ------E----       Distribution  : DISCRETE

                        ----Lower----    ----Upper----   -Confidence/Coverage-
  Confidence Bounds  : ------E----      ------E----                 -- %
  Tolerance Bounds   : ------E----      ------E----                 -- %
       Error Factor  : ------E----         Sided                    -- %

-------------------------------------------------------------------------------
Component          1: Water, Borated Internal Environment
Applications       2:
                   3:
-------------------------------------------------------------------------------
                Origin                      Record Type
Failure Data :   PLNT      LERS-CRLB-PMLG-PMTR-SOCR-    -    -    -    -
Exposure Data:   PLNT      MOPR-TSTR-   -    -    -    -    -    -    -    -

Data Collection Period:  73 through 79 (YY through YY)

Include Circuit? : U          Originating Facilities : IPS2-    -    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : Y          Failure Severity : C
IRADAP Suitable? : Y          Include System?   : I   Systems : BE-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y     Subsys. train :
------------------------------ REFERENCE INFORMATION ---------------------------
   Document Number : 20982        Detail Reference : 1.5-60
------------------------------- ADDITIONAL COMMENTS ----------------------------

-------------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Pumps, Unknown Driver
      Design: Unknown
Normal State: Normally Alternating
Failure Mode: Fails to Start                           Data Record Number:   1

--------------------------NUCLARR-CALCULATED-RATES-----------------------------
  Median:  1.403E-002  Upper Tolerance:  2.400E-002  Aggregation Type: 1
  Mean  :  1.347E-002  Error Factor   :  1.711E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
  Number of Failures   :      4          Number of Components  : ------
  Hours Per Component  : ------------    Demand Per Component  : --------
  Total Component Hours: ------------    Total Component Demand:      297

  Probability/Rate   :  1.340E-002       Type         : MEAN
  Variance           : ------E----       Units        : F/D
  Standard Deviation : ------E----       Distribution : BINOM

                       ----Lower----   ----Upper----  -Confidence/Coverage-
  Confidence Bounds  :  2.400E-003      2.400E-002              90 %
  Tolerance Bounds   : ------E----     ------E----              -- %
        Error Factor : ------E----        Sided                 -- %
-------------------------------------------------------------------------------
Component          1: Water, High Purity/Demineralized - Int.
Applications       2:
                   3:
-------------------------------------------------------------------------------
                 Origin                       Record Type
Failure Data :   PLNT      PMLG-CRLB-SURV-LERS-DEVR-OTHR-    -    -    -
Exposure Data:   PLNT      CRLB-SURV-   -    -    -    -    -    -    -

Data Collection Period:  70 through 79 (YY through YY)

Include Circuit? : U         Originating Facilities : BRP1-    -    -
Nuclear Origin?  : Y         Failure Degree    :
Bayesian Update? : N         Failure Severity : C
IRADAP Suitable? : Y         Include System?  : I  Systems : SJ-  -  -  -
Safety Grade?    : N
Primary Failure? : U     Subsys. train :
--------------------------- REFERENCE INFORMATION -----------------------------
  Document Number : 20081       Detail Reference : III-10
---------------------------- ADDITIONAL COMMENTS ------------------------------
FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP.

-------------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Pumps, Unknown Driver
         Design: Unknown
   Normal State: Normally Alternating
   Failure Mode: Fails to Start                        Data Record Number:   2

----------------------------NUCLARR-CALCULATED-RATES----------------------------
    Median:  3.410E-003   Upper Tolerance:  4.260E-003   Aggregation Type: 1
    Mean   : +0.000E+000  Error Factor    :  1.249E+000

------------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures    :       0         Number of Components  : ------
    Hours Per Component   : ------------    Demand Per Component  : --------
    Total Component Hours: ------------     Total Component Demand:      451

    Probability/Rate    :  9.480E-004       Type          : MEAN
    Variance            :  5.050E-007       Units         : F/D
    Standard Deviation : ------E----        Distribution : BETA

                         ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----      4.260E-003            95 %
    Tolerance Bounds    : ------E----      ------E----           -- %
          Error Factor : ------E----         Sided               -- %

--------------------------------------------------------------------------------
 Component            1: Water, High Purity/Demineralized - Int.
 Applications         2:
                      3:
--------------------------------------------------------------------------------
                  Origin                       Record Type
 Failure Data :    PLNT      UTDB-LERS-PMLG-SSLB-   -    -    -    -    -
 Exposure Data:    PLNT      DCCN-PMTR-RHLG-   -    -    -    -    -    -

 Data Collection Period:  71 through 84 (YY through YY)

 Include Circuit? : U          Originating Facilities : MNS1-    -    -
 Nuclear Origin?  : Y          Failure Degree    :
 Bayesian Update? : Y          Failure Severity : C
 IRADAP Suitable? : Y          Include System?   : I  Systems : SJ-  -  -  -
 Safety Grade?    : N
 Primary Failure? : U      Subsys. train :

--------------------------- REFERENCE INFORMATION ------------------------------
   Document Number : 21185        Detail Reference : 3.1-5,13

---------------------------- ADDITIONAL COMMENTS -------------------------------


--------------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Pumps, Unknown Driver
      Design: Unknown
Normal State: Normally Standby
Failure Mode: Fails to Start                          Data Record Number:   1

--------------------------NUCLARR-CALCULATED-RATES------------------------------
  Median:  3.681E-003   Upper Tolerance:  1.211E-002   Aggregation Type: 1
  Mean  :  3.115E-003   Error Factor    :  3.289E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
  Number of Failures     :      1         Number of Components   : ------
  Hours Per Component    : ------------   Demand Per Component   : --------
  Total Component Hours: ------------     Total Component Demand:      321

  Probability/Rate   :  1.600E-003        Type          : MEAN
  Variance           :  9.140E-007        Units         : F/D
  Standard Deviation : ------E----        Distribution  : BETA

                        ---Lower---    ---Upper---   -Confidence/Coverage-
  Confidence Bounds  : ------E----     ------E----              -- %
  Tolerance Bounds   : ------E----     ------E----              -- %
       Error Factor  : ------E----        Sided                 -- %

--------------------------------------------------------------------------------
Component          1: Water, Borated Internal Environment
Applications       2:
                   3:
--------------------------------------------------------------------------------
                  Origin                     Record Type
Failure Data :    PLNT      UTDB-LERS-INCD-MOPR-    -    -    -    -    -
Exposure Data:    PLNT      SSLB-SURV-JOBO-PMWR-    -    -    -    -    -

Data Collection Period:  74 through 83 (YY through YY)

Include Circuit? : U        Originating Facilities : HNP1-    -    -
Nuclear Origin?  : Y        Failure Degree    :
Bayesian Update? : Y        Failure Severity : C
IRADAP Suitable? : Y        Include System?  : I  Systems : BQ-  -  -  -
Safety Grade?    : Y
Primary Failure? : U    Subsys. train :

--------------------------- REFERENCE INFORMATION ------------------------------
  Document Number : 20585       Detail Reference : 4.1-5,11

---------------------------- ADDITIONAL COMMENTS -------------------------------


--------------------------------------------------------------------------------
```

```
             MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Valves, Check
        Design: No Operator
  Normal State: Unspecified
  Failure Mode: Fails to Close                          Data Record Number:   1

-------------------------------NUCLARR-CALCULATED-RATES------------------------
    Median:  3.610E-003   Upper Tolerance:  4.494E-003   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  1.245E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------------
    Number of Failures    :      0          Number of Components  : ------
    Hours Per Component   : ------------    Demand Per Component  : --------
    Total Component Hours: ------------     Total Component Demand:       426

    Probability/Rate    :  6.600E-005       Type          : MEDIAN
    Variance            :  5.500E-009       Units         : F/D
    Standard Deviation : ------E----        Distribution : DISCRETE

                         ----Lower----   ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----               -- %
    Tolerance Bounds    :  2.000E-005      2.100E-004                90 %
          Error Factor : ------E----          Sided                  -- %
--------------------------------------------------------------------------------
  Component             1: Unknown Internal Environment
  Applications          2:
                        3:
--------------------------------------------------------------------------------
                     Origin                         Record Type
  Failure Data :      PLNT       PMWR-LERS-INCD-    -    -    -    -    -    -
  Exposure Data:      PLNT       TSTR-PMTR-CRLB-    -    -    -    -    -    -

  Data Collection Period:  75 through 80 (YY through YY)

  Include Circuit? : U          Originating Facilities : NEE3-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?   : I  Systems : AL-  -  -  -
  Safety Grade?     : U
  Primary Failure? : U      Subsys. train :
------------------------------ REFERENCE INFORMATION ---------------------------
    Document Number : 21281        Detail Reference : 5-20
------------------------------- ADDITIONAL COMMENTS ----------------------------
  MEAN = 9.80E-05/D
--------------------------------------------------------------------------------
```

```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Valves, Check
        Design: No Operator
  Normal State: Unspecified
  Failure Mode: Fails to Open                          Data Record Number:   1

 ---------------------------NUCLARR-CALCULATED-RATES------------------------------
    Median:  3.601E-003   Upper Tolerance:  4.482E-003   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  1.245E+000

 ------------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures    :      0          Number of Components   : ------
    Hours Per Component   : ------------    Demand Per Component   : --------
    Total Component Hours: ------------     Total Component Demand:      427

    Probability/Rate    :  6.600E-005       Type          : MEDIAN
    Variance            :  5.500E-009       Units         : F/D
    Standard Deviation : ------E----        Distribution : DISCRETE

                          ----Lower----     ----Upper----    -Confidence/Coverage-
    Confidence Bounds   : ------E----       ------E----                -- %
    Tolerance Bounds    :  2.000E-005        2.100E-004                90 %
          Error Factor : ------E----           Sided                   -- %

 ---------------------------------------------------------------------------------
  Component            1: Unknown Internal Environment
  Applications         2:
                       3:
 ---------------------------------------------------------------------------------
                   Origin                          Record Type
  Failure Data :    PLNT      PMWR-LERS-INCD-    -    -    -    -    -    -
  Exposure Data:    PLNT      TSTR-PMTR-CRLB-    -    -    -    -    -    -

  Data Collection Period:  75 through 80 (YY through YY)

  Include Circuit? : U        Originating Facilities : NEE3-    -    -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : Y        Failure Severity : C
  IRADAP Suitable? : Y        Include System?   : I  Systems : AL-  -  -  -
  Safety Grade?    : U
  Primary Failure? : U    Subsys. train :

 -------------------------- REFERENCE INFORMATION --------------------------------
    Document Number : 21281        Detail Reference : 5-20

 --------------------------- ADDITIONAL COMMENTS ---------------------------------
  MEAN = 9.80E-05/D

 ---------------------------------------------------------------------------------
```

```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/28

     Component: Valves, Check
        Design: No Operator
  Normal State: Unspecified
  Failure Mode: Spurious Close (Transfer Closed)        Data Record Number:   1

--------------------------NUCLARR-CALCULATED-RATES------------------------------
   Median:  1.590E-006   Upper Tolerance:  1.266E-005   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  7.964E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------------
   Number of Failures    :       0         Number of Components  : ------
   Hours Per Component   : ------------    Demand Per Component  : --------
   Total Component Hours:        148000    Total Component Demand: --------

   Probability/Rate    :  7.800E-008       Type          : MEDIAN
   Variance            :  1.300E-013       Units         : F/H
   Standard Deviation : ------E----        Distribution : DISCRETE

                          ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds  : ------E----        ------E----              -- %
   Tolerance Bounds    :  6.900E-009        6.000E-007              90 %
         Error Factor : ------E----           Sided                 -- %

--------------------------------------------------------------------------------
  Component          1: Unknown Internal Environment
  Applications       2:
                     3:
--------------------------------------------------------------------------------
                  Origin                         Record Type
  Failure Data :   PLNT       PMMR-LERS-INCD-    -    -    -    -    -    -
  Exposure Data:   PLNT       TSTR-PMTR-CRLB-    -    -    -    -    -    -

  Data Collection Period:  75 through 80 (YY through YY)

  Include Circuit? : U        Originating Facilities : NEE3-    -    -
  Nuclear Origin?  : Y        Failure Degree   :
  Bayesian Update? : Y        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I  Systems : AL-  -  -  -
  Safety Grade?    : U
  Primary Failure? : U    Subsys. train :
------------------------------ REFERENCE INFORMATION ----------------------------
     Document Number : 21281        Detail Reference : 5-20
------------------------------ ADDITIONAL COMMENTS ------------------------------
  MEAN = 2.00E-07/H

--------------------------------------------------------------------------------
```

```
               MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Valves, Check
        Design: No Operator (tilting disk check valve)
  Normal State: Unspecified
  Failure Mode: Fails to Close                          Data Record Number:   1

 ---------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  4.353E-004   Upper Tolerance:  1.440E-003   Aggregation Type: 1
    Mean  :  3.678E-004   Error Factor   :  3.307E+000

 -----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures   :      1          Number of Components  : ------
    Hours Per Component  : ------------    Demand Per Component  : --------
    Total Component Hours: ------------    Total Component Demand:     2719

    Probability/Rate   :  9.100E-005       Type         : MEDIAN
    Variance           :  7.900E-009       Units        : F/D
    Standard Deviation : ------E----       Distribution : DISCRETE

                         ---Lower---     ---Upper---   -Confidence/Coverage-
    Confidence Bounds  : ------E----     ------E----             -- %
    Tolerance Bounds   :  3.000E-005      2.700E-004             90 %
         Error Factor  : ------E----        Sided                -- %

 --------------------------------------------------------------------------------
  Component          1: Unknown Internal Environment
  Applications       2:
                     3:
 --------------------------------------------------------------------------------
                  Origin                        Record Type
  Failure Data :   PLNT       PMWR-LERS-INCD-   -   -   -   -   -   -
  Exposure Data:   PLNT       TSTR-PNTR-CRLB-   -   -   -   -   -   -

  Data Collection Period:  75 through 80 (YY through YY)

  Include Circuit? : U         Originating Facilities : NEE3-    -    -
  Nuclear Origin?  : Y         Failure Degree     :
  Bayesian Update? : Y         Failure Severity : C
  IRADAP Suitable? : Y         Include System?  : I  Systems : AL-  -  -  -
  Safety Grade?    : U
  Primary Failure? : U    Subsys. train :
 ----------------------------- REFERENCE INFORMATION ----------------------------
     Document Number : 21281         Detail Reference : 5-20
 ----------------------------- ADDITIONAL COMMENTS ------------------------------
  MEAN = 1.30E-04/D

 --------------------------------------------------------------------------------
```

```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Valves, Check
        Design: No Operator (tilting disk check valve)
  Normal State: Unspecified
  Failure Mode: Fails to Open                          Data Record Number:   1

---------------------------------NUCLARR-CALCULATED-RATES----------------------------
    Median:  5.703E-004   Upper Tolerance:  7.109E-004   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  1.246E+000

-----------------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures     :      0          Number of Components  : ------
    Hours Per Component    : ------------    Demand Per Component  : --------
    Total Component Hours: ------------      Total Component Demand:     2707

    Probability/Rate    :  6.000E-005        Type           : MEDIAN
    Variance            :  3.800E-009        Units          : F/D
    Standard Deviation : ------E----         Distribution : DISCRETE

                          ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----             -- %
    Tolerance Bounds    :  1.900E-005       1.700E-004             90 %
          Error Factor : ------E----          Sided                -- %

-------------------------------------------------------------------------------------
  Component            1: Unknown Internal Environment
  Applications         2:
                       3:
-------------------------------------------------------------------------------------
                   Origin                         Record Type
  Failure Data :    PLNT       PMMR-LERS-INCD-    -    -    -    -    -    -
  Exposure Data:    PLNT       TSTR-PMTR-CRLB-    -    -    -    -    -    -

  Data Collection Period:  75 through 80 (YY through YY)

  Include Circuit? : U         Originating Facilities : NEE3-    -    -
  Nuclear Origin?  : Y         Failure Degree      :
  Bayesian Update? : Y         Failure Severity : C
  IRADAP Suitable? : Y         Include System?   : I  Systems : AL-  -  -  -
  Safety Grade?    : U
  Primary Failure? : U      Subsys. train :

----------------------------- REFERENCE INFORMATION ---------------------------------
    Document Number : 21281        Detail Reference : 5-20

----------------------------- ADDITIONAL COMMENTS -----------------------------------
  MEAN = 8.70E-05/D

-------------------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Valves, Check
        Design: No Operator (tilting disk check valve)
  Normal State: Unspecified
  Failure Mode: Spurious Close (Transfer Closed)        Data Record Number:   1

--------------------------NUCLARR-CALCULATED-RATES--------------------------
    Median:  9.843E-007   Upper Tolerance:  7.839E-006   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  7.964E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
    Number of Failures    :       0         Number of Components  : ------
    Hours Per Component   : ------------    Demand Per Component  : --------
    Total Component Hours:         239000   Total Component Demand: --------

    Probability/Rate   :  7.600E-008        Type         : MEDIAN
    Variance           :  1.100E-013        Units        : F/H
    Standard Deviation : ------E----        Distribution : DISCRETE

                         ---Lower---      ---Upper---    -Confidence/Coverage-
    Confidence Bounds  : ------E----      ------E----              -- %
    Tolerance Bounds   :  6.800E-009       5.700E-007              90 %
          Error Factor : ------E----         Sided                 -- %

----------------------------------------------------------------------------
  Component          1: Unknown Internal Environment
  Applications       2:
                     3:
----------------------------------------------------------------------------
                 Origin                          Record Type
  Failure Data :  PLNT       PMWR-LERS-INCD-   -    -    -    -    -    -
  Exposure Data:  PLNT       TSTR-PMTR-CRLB-   -    -    -    -    -    -

  Data Collection Period:  75 through 80 (YY through YY)

  Include Circuit? : U          Originating Facilities : NEE3-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : AL-  -  -  -
  Safety Grade?    : U
  Primary Failure? : U     Subsys. train :

------------------------- REFERENCE INFORMATION ----------------------------
    Document Number : 21281       Detail Reference : 5-20

--------------------------- ADDITIONAL COMMENTS ----------------------------
  MEAN = 1.90E-07/H

----------------------------------------------------------------------------
```

MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

```
   Component: Valves, Check
      Design: Unknown Operator
Normal State: Unspecified
Failure Mode: Fails to Close                          Data Record Number:   1

---------------------------NUCLARR-CALCULATED-RATES---------------------------
  Median:  3.681E-003   Upper Tolerance:  1.211E-002   Aggregation Type: 1
  Mean  :  3.115E-003   Error Factor   :  3.289E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
  Number of Failures    :      1          Number of Components   : ------
  Hours Per Component   : ------------    Demand Per Component   : --------
  Total Component Hours: ------------     Total Component Demand:      321

  Probability/Rate    :  1.000E-004       Type          : MEDIAN
  Variance            :  1.400E-008       Units         : F/D
  Standard Deviation : ------E----        Distribution : DISCRETE

                        ---Lower---      ---Upper---    -Confidence/Coverage-
  Confidence Bounds  : ------E----       ------E----             -- %
  Tolerance Bounds   :  3.300E-005        3.400E-004             90 %
        Error Factor : ------E----          Sided                -- %

------------------------------------------------------------------------------
Component            1: Unknown Internal Environment
Applications         2:
                     3:
------------------------------------------------------------------------------
                Origin                      Record Type
Failure Data :   PLNT        PWR-LERS-INCD-    -    -    -    -    -    -
Exposure Data:   PLNT        TSTR-PMTR-CRLB-   -    -    -    -    -    -

Data Collection Period:  75 through 80 (YY through YY)

Include Circuit? : U         Originating Facilities : NEE3-    -    -
Nuclear Origin?  : Y         Failure Degree    :
Bayesian Update? : Y         Failure Severity : C
IRADAP Suitable? : Y         Include System?  : I  Systems : AL-  -  -  -
Safety Grade?    : U
Primary Failure? : U     Subsys. train :

---------------------------- REFERENCE INFORMATION ----------------------------
   Document Number : 21281        Detail Reference : 5-20

----------------------------- ADDITIONAL COMMENTS -----------------------------
MEAN = 1.60E-04/D

------------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Valves, Check
        Design: Unknown Operator
  Normal State: Unspecified
  Failure Mode: Fails to Close                      Data Record Number:   2

  -------------------------NUCLARR-CALCULATED-RATES--------------------------
    Median:  1.213E-003   Upper Tolerance:  1.510E-003   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  1.245E+000

  ----------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------
    Number of Failures   :      0         Number of Components   : ------
    Hours Per Component  : ------------   Demand Per Component   : --------
    Total Component Hours: ------------   Total Component Demand:     1272

    Probability/Rate   :  6.600E-004      Type         : MEAN
    Variance           :  2.450E-007      Units        : F/D
    Standard Deviation : ------E----      Distribution : BETA

                         ----Lower----   ----Upper----  -Confidence/Coverage-
    Confidence Bounds  : ------E----      1.510E-003            95 %
    Tolerance Bounds   : ------E----     ------E----            -- %
          Error Factor : ------E----        Sided               -- %
  ---------------------------------------------------------------------------
  Component          1: Unknown Internal Environment
  Applications       2:
                     3:
  ---------------------------------------------------------------------------
                 Origin                        Record Type
  Failure Data :   PLNT      UTDB-LERS-PMLG-SSLB-   -    -    -    -    -
  Exposure Data:   PLNT      DCCN-PNTR-RMLG-   -    -    -    -    -    -

  Data Collection Period:  71 through 84 (YY through YY)

  Include Circuit? : U         Originating Facilities : NNS1-    -    -
  Nuclear Origin?  : Y         Failure Degree    :
  Bayesian Update? : Y         Failure Severity  : C
  IRADAP Suitable? : Y         Include System?   : I  Systems : XC-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : U     Subsys. train :
  ------------------------ REFERENCE INFORMATION ----------------------------
     Document Number : 21185       Detail Reference : 3.1-5,12
  ------------------------- ADDITIONAL COMMENTS -----------------------------


  ---------------------------------------------------------------------------
```

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Valves, Check
        Design: Unknown Operator
  Normal State: Unspecified
  Failure Mode: Fails to Close                      Data Record Number:   3

 ------------------------NUCLARR-CALCULATED-RATES------------------------------
    Median: 4.692E-003   Upper Tolerance:  1.040E-002   Aggregation Type: 1
    Mean  : 4.438E-003   Error Factor   :  2.217E+000

 ---------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures     :      3         Number of Components   : ------
    Hours Per Component    : ------------   Demand Per Component   : --------
    Total Component Hours: ------------     Total Component Demand:      676

    Probability/Rate     : ------E----      Type          :
    Variance             : ------E----      Units         : F/D
    Standard Deviation : ------E----        Distribution :

                          ---Lower---    ---Upper---    -Confidence/Coverage-
    Confidence Bounds   : ------E----    1.040E-002              95 %
    Tolerance Bounds    : ------E----    ------E----             -- %
          Error Factor : ------E----       Sided                 -- %

 ------------------------------------------------------------------------------
  Component            1: Water, High Purity/Demineralized - Int.
  Applications         2:
                       3:
 ------------------------------------------------------------------------------
                   Origin                       Record Type
  Failure Data :   PLNT       UTDB-LERS-PMLG-SSLB-    -    -    -    -    -
  Exposure Data:   PLNT       DCCN-PMTR-RMLG-    -    -    -    -    -    -

  Data Collection Period:  71 through 84 (YY through YY)

  Include Circuit? : U         Originating Facilities : MNS1-    -    -
  Nuclear Origin?  : Y         Failure Degree     :
  Bayesian Update? : N         Failure Severity : C
  IRADAP Suitable? : Y         Include System?  : I  Systems : SJ-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U     Subsys. train :

 -------------------------- REFERENCE INFORMATION -----------------------------
    Document Number : 21185        Detail Reference : 3.1-5

 --------------------------- ADDITIONAL COMMENTS ------------------------------

 ------------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

    Component: Valves, Check
       Design: Unknown Operator
 Normal State: Unspecified
 Failure Mode: Fails to Open                         Data Record Number:   1

-------------------------NUCLARR-CALCULATED-RATES-------------------------
   Median:  6.106E-003   Upper Tolerance:  7.622E-003   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  1.248E+000

--------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
   Number of Failures    :      0         Number of Components   : ------
   Hours Per Component   : ------------   Demand Per Component   : --------
   Total Component Hours: ------------   Total Component Demand:      251

   Probability/Rate   :  6.600E-005       Type         : MEDIAN
   Variance           :  5.700E-009       Units        : F/D
   Standard Deviation : ------E----       Distribution : DISCRETE

                        ----Lower----   ----Upper----   -Confidence/Coverage-
   Confidence Bounds  : ------E----     ------E----             -- %
   Tolerance Bounds   :  2.100E-005      2.200E-004             90 %
         Error Factor : ------E----        Sided                -- %

--------------------------------------------------------------------------
 Component          1: Unknown Internal Environment
 Applications       2:
                    3:
--------------------------------------------------------------------------
                  Origin                      Record Type
 Failure Data :   PLNT       PWWR-LERS-INCD-   -   -   -   -   -   -
 Exposure Data:   PLNT       TSTR-PMTR-CRLB-   -   -   -   -   -   -

 Data Collection Period:  75 through 80 (YY through YY)

 Include Circuit? : U          Originating Facilities : NEE3-    -    -
 Nuclear Origin?  : Y          Failure Degree    :
 Bayesian Update? : Y          Failure Severity  : C
 IRADAP Suitable? : Y          Include System?   : I  Systems : AL-  -  -  -
 Safety Grade?    : U
 Primary Failure? : U    Subsys. train :

---------------------------- REFERENCE INFORMATION ------------------------
   Document Number : 21281       Detail Reference : 5-20
---------------------------- ADDITIONAL COMMENTS --------------------------
 MEAN = 9.90E-05/D

--------------------------------------------------------------------------
```

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Valves, Check
        Design: Unknown Operator
  Normal State: Unspecified
  Failure Mode: Fails to Open                      Data Record Number:   2

 ---------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  2.217E-004   Upper Tolerance:  2.763E-004   Aggregation Type: 1
    Mean   : +0.000E+000   Error Factor   :  1.247E+000

 ----------------------REFERENCE-RAM-and-PROBABILITY-DATA----------------------
    Number of Failures   :      0         Number of Components  : ------
    Hours Per Component  : ------------   Demand Per Component  : --------
    Total Component Hours: ------------   Total Component Demand:      6968

    Probability/Rate    :  4.320E-005     Type         : MEAN
    Variance            :  2.410E-009     Units        : F/D
    Standard Deviation : ------E----      Distribution : DISCRETE

                         ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds  : ------E----      ------E----               -- %
    Tolerance Bounds   : ------E----      ------E----               -- %
          Error Factor : ------E----         Sided                  -- %

 ------------------------------------------------------------------------------
  Component         1: Unknown Internal Environment
  Applications      2:
                    3:
 ------------------------------------------------------------------------------
                  Origin                    Record Type
  Failure Data :   PLNT      LERS-CRLB-PNLG-PMTR-DEVR-   -    -    -    -
  Exposure Data:   PLNT      TSTR-   -    -    -    -    -    -    -    -

  Data Collection Period:  73 through 79 (YY through YY)

  Include Circuit? : U        Originating Facilities : ZIS1-ZIS2-    -
  Nuclear Origin?  : Y        Failure Degree   :
  Bayesian Update? : Y        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I  Systems : AL-  -  -  -
  Safety Grade?    : U
  Primary Failure? : U    Subsys. train :

 -------------------------- REFERENCE INFORMATION -----------------------------
     Document Number : 21381      Detail Reference : 1.5-71
 --------------------------- ADDITIONAL COMMENTS ------------------------------

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```

```
                MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Valves, Check
         Design: Unknown Operator
   Normal State: Unspecified
   Failure Mode: Fails to Open                          Data Record Number:   3

--------------------------NUCLARR-CALCULATED-RATES----------------------------
     Median:  1.069E-003   Upper Tolerance:  1.332E-003   Aggregation Type: 1
     Mean  : +0.000E+000   Error Factor    :  1.246E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
     Number of Failures    :      0        Number of Components   : ------
     Hours Per Component   : ------------  Demand Per Component   : --------
     Total Component Hours: ------------   Total Component Demand:     1444

     Probability/Rate    :  7.020E-005     Type         : MEAN
     Variance            :  1.090E-008     Units        : F/D
     Standard Deviation : ------E----      Distribution : DISCRETE

                         ----Lower----   ----Upper----   -Confidence/Coverage-
     Confidence Bounds   : ------E----     ------E----               -- %
     Tolerance Bounds    : ------E----     ------E----               -- %
           Error Factor : ------E----        Sided                   -- %

------------------------------------------------------------------------------
   Component          1: Unknown Internal Environment
   Applications       2:
                      3:
------------------------------------------------------------------------------
                   Origin                   Record Type
   Failure Data :   PLNT       LERS-CRLB-PMLG-PMTR-SOCR-    -    -    -    -
   Exposure Data:   PLNT       TSTR-   -    -    -    -    -    -    -    -

   Data Collection Period:  73 through 79 (YY through YY)

   Include Circuit? : U        Originating Facilities : IPS2-    -    -
   Nuclear Origin?  : Y        Failure Degree   :
   Bayesian Update? : Y        Failure Severity : C
   IRADAP Suitable? : Y        Include System?  : I  Systems : AL-  -  -  -
   Safety Grade?    : U
   Primary Failure? : Y     Subsys. train :

---------------------------- REFERENCE INFORMATION ----------------------------
     Document Number : 20982       Detail Reference : 1.5-58

----------------------------- ADDITIONAL COMMENTS -----------------------------

------------------------------------------------------------------------------
```

```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Valves, Check
        Design: Unknown Operator
  Normal State: Unspecified
  Failure Mode: Fails to Open                            Data Record Number:   4

------------------------------NUCLARR-CALCULATED-RATES--------------------------
   Median:  1.213E-003   Upper Tolerance:  1.510E-003   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  1.245E+000

--------------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
   Number of Failures   :      0          Number of Components  : ------
   Hours Per Component  : ------------    Demand Per Component  : --------
   Total Component Hours: ------------    Total Component Demand:     1272

   Probability/Rate    :  1.150E-004      Type         : MEAN
   Variance            :  7.400E-009      Units        : F/D
   Standard Deviation  : ------E----      Distribution : BETA

                          ----Lower----   ----Upper----  -Confidence/Coverage-
   Confidence Bounds   : ------E----       1.510E-003            95 %
   Tolerance Bounds    : ------E----      ------E----            -- %
         Error Factor  : ------E----         Sided               -- %

--------------------------------------------------------------------------------
  Component           1: Unknown Internal Environment
  Applications        2:
                      3:
--------------------------------------------------------------------------------
                  Origin                     Record Type
  Failure Data :   PLNT      UTDB-LERS-PMLG-SSLB-    -    -    -    -    -
  Exposure Data:   PLNT      DCCN-PMTR-RHLG-    -    -    -    -    -    -

  Data Collection Period:  71 through 84 (YY through YY)

  Include Circuit? : U         Originating Facilities : MNS1-    -    -
  Nuclear Origin?  : Y         Failure Degree    :
  Bayesian Update? : Y         Failure Severity  : C
  IRADAP Suitable? : Y         Include System?   : I  Systems : XC-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : U    Subsys. train :

------------------------------ REFERENCE INFORMATION ---------------------------
   Document Number : 21185       Detail Reference : 3.1-5,12

------------------------------- ADDITIONAL COMMENTS ----------------------------

--------------------------------------------------------------------------------
```

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Valves, Check
      Design: Unknown Operator
Normal State: Unspecified
Failure Mode: Fails to Open                        Data Record Number:   5

------------------------------NUCLARR-CALCULATED-RATES----------------------------
  Median:  2.279E-003  Upper Tolerance:  2.840E-003  Aggregation Type: 1
  Mean  : +0.000E+000  Error Factor    :  1.246E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------------
  Number of Failures   :      0          Number of Components  ; ------
  Hours Per Component  : ------------    Demand Per Component  : --------
  Total Component Hours: ------------    Total Component Demand:      676

  Probability/Rate   :  2.290E-003       Type         : MEAN
  Variance           :  1.080E-006       Units        : F/D
  Standard Deviation : ------E----       Distribution : BETA

                      ----Lower----    ----Upper----   -Confidence/Coverage-
  Confidence Bounds  : ------E----      2.840E-003            95 %
  Tolerance Bounds   : ------E----     ------E----            -- %
        Error Factor : ------E----        Sided               -- %

-----------------------------------------------------------------------------------
Component           1: Water, High Purity/Demineralized - Int.
Applications        2:
                    3:
-----------------------------------------------------------------------------------
                Origin                    Record Type
Failure Data :   PLNT       UTDB-LERS-PMLG-SSLB-   -    -    -    -    -
Exposure Data:   PLNT       DCCN-PMTR-RHLG-   -    -    -    -    -    -

Data Collection Period:  71 through 84 (YY through YY)

Include Circuit? : U          Originating Facilities : MNS1-    -    -
Nuclear Origin?  : Y          Failure Degree   :
Bayesian Update? : Y          Failure Severity : C
IRADAP Suitable? : Y          Include System?  : I  Systems : SJ-  -  -  .
Safety Grade?    : N
Primary Failure? : U    Subsys. train :

---------------------------- REFERENCE INFORMATION --------------------------------
   Document Number : 21185        Detail Reference : 3.1-5,12

----------------------------- ADDITIONAL COMMENTS ---------------------------------


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```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

    Component: Valves, Check
       Design: Unknown Operator
 Normal State: Unspecified
 Failure Mode: Internal Leakage                      Data Record Number:   1

 ---------------------------NUCLARR-CALCULATED-RATES---------------------------
   Median:  3.869E-007   Upper Tolerance:  3.081E-006   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  7.964E+000

 -------------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------
   Number of Failures    :       0          Number of Components  : ------
   Hours Per Component   : ------------     Demand Per Component  : --------
   Total Component Hours:        608000     Total Component Demand: --------

   Probability/Rate    :  8.380E-007        Type         : MEAN
   Variance            :  7.290E-013        Units        : F/H
   Standard Deviation : ------E----         Distribution : DISCRETE

                          ----Lower----    ----Upper----  -Confidence/Coverage-
   Confidence Bounds   : ------E----      ------E----               -- %
   Tolerance Bounds    : ------E----      ------E----               -- %
         Error Factor : ------E- --          Sided                  -- %

 ------------------------------------------------------------------------------
 Component           1: Unknown Internal Environment
 Applications        2:
                     3:
 ------------------------------------------------------------------------------
                 Origin                          Record Type
 Failure Data :   PLNT     LERS-CRLB-PMLG-PMTR-DEVR-    -    -    -    -
 Exposure Data:   PLNT     MOPR-TSTR-   -    -    -    -    -    -    -    -

 Data Collection Period:  73 through 79 (YY through YY)

 Include Circuit? : U        Originating Facilities : ZIS1-ZIS2-    -
 Nuclear Origin?  : Y        Failure Degree    :
 Bayesian Update? : Y        Failure Severity : C
 IRADAP Suitable? : Y        Include System?  : I  Systems : AL-  -  -  -
 Safety Grade?    : U
 Primary Failure? : U     Subsys. train :
 ----------------------------- REFERENCE INFORMATION --------------------------
   Document Number : 21381      Detail Reference : 1.5-71
 ------------------------------ ADDITIONAL COMMENTS ---------------------------


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```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Valves, Check
      Design: Unknown Operator
Normal State: Unspecified
Failure Mode: Internal Leakage                      Data Record Number:   2

------------------------------NUCLARR-CALCULATED-RATES------------------------------
  Median:  2.682E-006   Upper Tolerance:  8.756E-006   Aggregation Type: 1
  Mean  :  2.252E-006   Error Factor   :  3.265E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
  Number of Failures   :        1      Number of Components  : ------
  Hours Per Component  : ------------  Demand Per Component  : --------
  Total Component Hours:       444000  Total Component Demand: --------

  Probability/Rate    :  9.200E-007     Type         : MEAN
  Variance            :  1.030E-012     Units        : F/H
  Standard Deviation : ------E----      Distribution : DISCRETE

                      ----Lower----   ----Upper----   -Confidence/Coverage-
  Confidence Bounds  : ------E----     ------E----              -- %
  Tolerance Bounds   : ------E----     ------E----              -- %
        Error Factor : ------E----        Sided                 -- %

-----------------------------------------------------------------------------------
Component          1: Unknown Internal Environment
Applications       2:
                   3:
-----------------------------------------------------------------------------------
                Origin                       Record Type
Failure Data :   PLNT      LERS-CRLB-PMLG-PMTR-SOCR-    -    -    -    -
Exposure Data:   PLNT      MOPR-TSTR-   -    -    -    -    -    -    -    -

Data Collection Period:  73 through 79 (YY through YY)

Include Circuit? : U          Originating Facilities : IPS2-    -    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : Y          Failure Severity : C
IRADAP Suitable? : Y          Include System?  : I   Systems : AL-  -  -  -
Safety Grade?    : U
Primary Failure? : Y     Subsys. train :

---------------------------- REFERENCE INFORMATION ---------------------------------
  Document Number : 20982       Detail Reference : 1.5-58

----------------------------- ADDITIONAL COMMENTS ----------------------------------

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```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

    Component: Valves, Check
       Design: Unknown Operator
 Normal State: Unspecified
 Failure Mode: Spurious Close (Transfer Closed)      Data Record Number:   1

----------------------------NUCLARR-CALCULATED-RATES----------------------------
   Median:  6.879E-007   Upper Tolerance:  5.478E-006   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  7.964E+000

------------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
   Number of Failures    :       0        Number of Components   : ------
   Hours Per Component   : ------------   Demand Per Component   : --------
   Total Component Hours:          342000  Total Component Demand: --------

   Probability/Rate    :  7.400E-008      Type          : MEDIAN
   Variance            :  8.700E-014      Units         : F/H
   Standard Deviation  : ------E----      Distribution  : DISCRETE

                          ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds   : ------E----      ------E----               -- %
   Tolerance Bounds    :  6.700E-009       5.200E-007               90 %
         Error Factor  : ------E----         Sided                  -- %

--------------------------------------------------------------------------------
 Component           1: Unknown Internal Environment
 Applications        2:
                     3:
--------------------------------------------------------------------------------
                 Origin                          Record Type
 Failure Data :   PLNT       PMMR-LERS-INCD-    -    -    -    -    -    -
 Exposure Data:   PLNT       TSTR-PMTR-CRLB-    -    -    -    -    -    -

 Data Collection Period:  75 through 80 (YY through YY)

 Include Circuit? : U         Originating Facilities : NEE3-    -    -
 Nuclear Origin?  : Y         Failure Degree   :
 Bayesian Update? : Y         Failure Severity : C
 IRADAP Suitable? : Y         Include System?  : I  Systems : AL-  -  -  -
 Safety Grade?    : U
 Primary Failure? : U     Subsys. train :

------------------------------- REFERENCE INFORMATION --------------------------
   Document Number : 21281      Detail Reference : 5-20

-------------------------------- ADDITIONAL COMMENTS ---------------------------
 MEAN = 1.80E-07/H

--------------------------------------------------------------------------------
```

```
              MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Valves, Hydraulic Operator
      Design: Unknown
Normal State: Normally Open
Failure Mode: Fails to Operate                           Data Record Number:   1

─────────────────────────────NUCLARR─CALCULATED─RATES─────────────────────────────
  Median:  3.968E-003   Upper Tolerance:  6.399E-003   Aggregation Type: 1
  Mean  :  3.900E-003   Error Factor    :  1.613E+000

──────────────────────────REFERENCE─RAW─and─PROBABILITY─DATA──────────────────────
  Number of Failures    :     10          Number of Components  : ------
  Hours Per Component   : ------------    Demand Per Component  : --------
  Total Component Hours: ------------     Total Component Demand:     2564

  Probability/Rate    :  2.800E-003       Type          : MEDIAN
  Variance            :  1.200E-006       Units         : F/D
  Standard Deviation : ------E----        Distribution : DISCRETE

                        ───Lower───    ───Upper───   -Confidence/Coverage-
  Confidence Bounds  : ------E----     ------E----           -- %
  Tolerance Bounds   :  1.400E-003      4.900E-003           90 %
        Error Factor : ------E----        Sided              -- %

──────────────────────────────────────────────────────────────────────────────────
Component          1: Unknown Internal Environment
Applications       2:
                   3:
──────────────────────────────────────────────────────────────────────────────────
                 Origin                     Record Type
Failure Data :   PLNT       PMMR-LERS-INCD-   -   -   -   -   -   -
Exposure Data:   PLNT       TSTR-PMTR-CRLB-   -   -   -   -   -   -

Data Collection Period:  75 through 80 (YY through YY)

Include Circuit? : U         Originating Facilities : NEE3-   -   -
Nuclear Origin?  : Y         Failure Degree   :
Bayesian Update? : Y         Failure Severity : C
IRADAP Suitable? : Y         Include System?  : I  Systems : AL-  -  -  -
Safety Grade?    : U
Primary Failure? : U    Subsys. train :
─────────────────────────── REFERENCE INFORMATION ────────────────────────────────
  Document Number : 21281        Detail Reference : 5-20
──────────────────────────── ADDITIONAL COMMENTS ─────────────────────────────────
MEAN = 3.50E-03/D

──────────────────────────────────────────────────────────────────────────────────
```

260

```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Valves, Hydraulic Operator
        Design: Unknown
  Normal State: Normally Open
  Failure Mode: Spurious Close (Transfer Closed)        Data Record Number:  1

-------------------------NUCLARR-CALCULATED-RATES----------------------------
    Median:  8.506E-007   Upper Tolerance:  6.837E-006   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  7.964E+000

---------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures   :       0        Number of Components  : ------
    Hours Per Component  : ------------   Demand Per Component  : --------
    Total Component Hours:       274000   Total Component Demand: --------

    Probability/Rate    :  7.600E-008     Type          : MEDIAN
    Variance            :  1.000E-013     Units         : F/H
    Standard Deviation  : ------E----     Distribution  : DISCRETE

                           ---Lower---     ---Upper---    -Confidence/Coverage-
    Confidence Bounds   : ------E----     ------E----             -- %
    Tolerance Bounds    :  6.800E-009      5.500E-007             90 %
          Error Factor  : ------E----        Sided                -- %

-----------------------------------------------------------------------------
  Component          1: Unknown Internal Environment
  Applications       2:
                     3:
-----------------------------------------------------------------------------
                   Origin                        Record Type
  Failure Data :    PLNT      PMNR-LERS-INCD-    -    -    -    -    -    -
  Exposure Data:    PLNT      TSTR-PMTR-CRLB-    -    -    -    -    -    -

  Data Collection Period:  75 through 80 (YY through YY)

  Include Circuit? : U          Originating Facilities : NEE3-    -    -
  Nuclear Origin?  : Y          Failure Degree     :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : AL-  -  -  -
  Safety Grade?    : U
  Primary Failure? : U     Subsys. train :
-------------------------- REFERENCE INFORMATION ----------------------------
     Document Number : 21281       Detail Reference : 5-20
--------------------------- ADDITIONAL COMMENTS -----------------------------
  MEAN = 1.90E-07/H

-----------------------------------------------------------------------------
```

```
         MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

    Component: Valves, Motor Operator
       Design: Unknown
 Normal State: Normally Open
 Failure Mode: Fails to Close                         Data Record Number:   1

──────────────────────NUCLARR-CALCULATED-RATES─────────────────────────────
   Median:  4.157E-002   Upper Tolerance:  1.160E-001   Aggregation Type: 1
   Mean  :  3.846E-002   Error Factor   :  2.790E+000

──────────────────REFERENCE-RAW-and-PROBABILITY-DATA───────────────────────
   Number of Failures    :      2         Number of Components  :     1
   Hours Per Component   : ------------   Demand Per Component  : --------
   Total Component Hours: ------------    Total Component Demand:      52

   Probability/Rate    :  3.840E-002      Type         : MEAN
   Variance            : ------E----      Units        : F/D
   Standard Deviation  : ------E----      Distribution : F

                         ───Lower───     ───Upper───    -Confidence/Coverage-
   Confidence Bounds   :  6.850E-003      1.160E-001             90 %
   Tolerance Bounds    : ------E----     ------E----             -- %
         Error Factor  : ------E----        Sided                -- %
───────────────────────────────────────────────────────────────────────────
 Component           1: Steam Internal Environment
 Applications        2:
                     3:
───────────────────────────────────────────────────────────────────────────
              Origin                         Record Type
 Failure Data :  PLNT       PMLG-CRLB-SURV-LERS-DEVR-OTHR-     -    -    -
 Exposure Data:  PLNT       CRLB-SURV-   -    -    -    -    -    -    -

 Data Collection Period:  70 through 79 (YY through YY)

 Include Circuit? : U          Originating Facilities : BRP1-    -    -
 Nuclear Origin?  : Y          Failure Degree    :
 Bayesian Update? : N          Failure Severity : C
 IRADAP Suitable? : Y          Include System?  : I  Systems : MS-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : U    Subsys. train :
─────────────────────────── REFERENCE INFORMATION ─────────────────────────
   Document Number : 20081         Detail Reference : III-11
─────────────────────────── ADDITIONAL COMMENTS ───────────────────────────
 FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP.
───────────────────────────────────────────────────────────────────────────
```

```
         MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Valves, Motor Operator
      Design: Unknown
Normal State: Normally Open
Failure Mode: Fails to Close                          Data Record Number:   2

─────────────────────────NUCLARR─CALCULATED─RATES──────────────────────────
  Median:  1.591E-002  Upper Tolerance:  2.300E-002  Aggregation Type: 1
  Mean  :  1.565E-002  Error Factor   :  1.446E+000

────────────────────REFERENCE─RAW─and─PROBABILITY─DATA─────────────────────
  Number of Failures    :     10       Number of Components  :    21
  Hours Per Component   : ------------ Demand Per Component  : --------
  Total Component Hours: ------------ Total Component Demand:     639

  Probability/Rate   : 1.560E-002      Type         : MEAN
  Variance           : ------E----     Units        : F/D
  Standard Deviation : ------E----     Distribution : BINOM

                       ───Lower───   ───Upper───   -Confidence/Coverage-
  Confidence Bounds  : 7.500E-003    2.300E-002            90 %
  Tolerance Bounds   : ------E----   ------E----           -- %
       Error Factor  : ------E----      Sided              -- %

───────────────────────────────────────────────────────────────────────────
Component            1: Unknown Internal Environment
Applications         2:
                     3:
───────────────────────────────────────────────────────────────────────────
                Origin                 Record Type
Failure Data :   PLNT      PMLG-CRLB-SURV-LERS-DEVR-OTHR-    -    -    -
Exposure Data:   PLNT      CRLB-SURV-  -    -    -    -    -    -    -

Data Collection Period:  70 through 79 (YY through YY)

Include Circuit? : U         Originating Facilities : BRP1-    -    -
Nuclear Origin?  : Y         Failure Degree    :
Bayesian Update? : N         Failure Severity : C
IRADAP Suitable? : Y         Include System?   : I   Systems : ZZ-  -  -  -
Safety Grade?    : U
Primary Failure? : U     Subsys. train :

──────────────────────── REFERENCE INFORMATION ────────────────────────────
   Document Number : 20081        Detail Reference : III-11

──────────────────────── ADDITIONAL COMMENTS ──────────────────────────────
FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP.

───────────────────────────────────────────────────────────────────────────
```

```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Valves, Motor Operator
      Design: Unknown
Normal State: Normally Open
Failure Mode: Fails to Close                              Data Record Number:   3

─────────────────────HUCLARR-CALCULATED-RATES─────────────────────────────────
  Median:  3.480E-003   Upper Tolerance:  4.800E-003   Aggregation Type: 1
  Mean  :  3.456E-003   Error Factor   :  1.376E+000

─────────────────REFERENCE-RAW-and-PROBABILITY-DATA────────────────────────────
  Number of Failures    :      19             Number of Components  : ------
  Hours Per Component   : ------------        Demand Per Component  : --------
  Total Component Hours: ------------         Total Component Demand:     5497

  Probability/Rate    :  3.000E-003           Type         : MEAN
  Variance            :  4.330E-008           Units        : F/D
  Standard Deviation : ------E----            Distribution : BETA

                        ───Lower───     ───Upper───    -Confidence/Coverage-
  Confidence Bounds  : ------E----      4.800E-003           95 %
  Tolerance Bounds   : ------E----     ------E----           -- %
       Error Factor : ------E----        Sided                -- %

───────────────────────────────────────────────────────────────────────────────
Component          1: Unknown Internal Environment
Applications       2:
                   3:
───────────────────────────────────────────────────────────────────────────────
                Origin                       Record Type
Failure Data :   PLNT       UTDB-LERS-PMLG-SSLB-    -    -    -    -    -
Exposure Data:   PLNT       DCCN-PMTR-RHLG-    -    -    -    -    -    -

Data Collection Period:  71 through 84 (YY through YY)

Include Circuit? : U          Originating Facilities : MMS1-    -    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : Y          Failure Severity : C
IRADAP Suitable? : Y          Include System?   : E  Systems : NT-  -  -  -
Safety Grade?    : N
Primary Failure? : U     Subsys. train :

──────────────────────── REFERENCE INFORMATION ────────────────────────────────
   Document Number : 21185        Detail Reference : 3.1-5,12

────────────────────────── ADDITIONAL COMMENTS ────────────────────────────────
MOV'S OUTSIDE DRYWELL
───────────────────────────────────────────────────────────────────────────────
```

```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Valves, Motor Operator
         Design: Unknown
   Normal State: Normally Open
   Failure Mode: Fails to Close                          Data Record Number:   4

---------------------------NUCLARR-CALCULATED-RATES----------------------------
    Median:  1.941E-002   Upper Tolerance:  3.390E-002   Aggregation Type: 1
    Mean  :  1.897E-002   Error Factor   :  1.746E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures    :      7          Number of Components  : ------
    Hours Per Component   : ------------    Demand Per Component  : --------
    Total Component Hours: ------------     Total Component Demand:      369

    Probability/Rate    :  4.900E-003       Type          : MEAN
    Variance            :  2.730E-006       Units         : F/D
    Standard Deviation : ------E----        Distribution : BETA

                          ----Lower----   ----Upper----  -Confidence/Coverage-
    Confidence Bounds   : ------E----      3.390E-002            95 %
    Tolerance Bounds    : ------E----     ------E----            -- %
          Error Factor : ------E----         Sided               -- %

-------------------------------------------------------------------------------
  Component           1: Unknown Internal Environment
  Applications        2:
                      3:
-------------------------------------------------------------------------------
                   Origin                     Record Type
  Failure Data :    PLNT      UTDB-LERS-PMLG-SSLB-   -   -   -   -   -   -
  Exposure Data:    PLNT      DCCN-PMTR-RMLG-    -   -   -   -   -   -   -

  Data Collection Period:  71 through 84 (YY through YY)

  Include Circuit? : U          Originating Facilities : MMS1-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I   Systems : NT-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U     Subsys. train :
-------------------------- REFERENCE INFORMATION ------------------------------
    Document Number : 21185       Detail Reference : 3.1-5,12
--------------------------- ADDITIONAL COMMENTS -------------------------------
  MOV'S INSIDE DRYWELL

-------------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Valves, Motor Operator
         Design: Unknown
   Normal State: Normally Closed
   Failure Mode: Fails to Operate                     Data Record Number:   1

---------------------------NUCLARR-CALCULATED-RATES-----------------------------
     Median:  6.176E-003   Upper Tolerance:  9.946E-003   Aggregation Type: 1
     Mean  :  6.072E-003   Error Factor   :  1.611E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
     Number of Failures    :      10        Number of Components  : ------
     Hours Per Component   : ------------   Demand Per Component  : --------
     Total Component Hours: ------------   Total Component Demand:     1647

     Probability/Rate    :  5.730E-003      Type         : MEAN
     Variance            :  1.840E-006      Units        : F/D
     Standard Deviation : ------E----       Distribution : DISCRETE

                          ---Lower---     ---Upper---    -Confidence/Coverage-
     Confidence Bounds  : ------E----     ------E----                -- %
     Tolerance Bounds   : ------E----     ------E----                -- %
          Error Factor  : ------E----        Sided                   -- %
--------------------------------------------------------------------------------
   Component          1: Water, Borated Internal Environment
   Applications       2:
                      3:
--------------------------------------------------------------------------------
                 Origin                        Record Type
   Failure Data :  PLNT      LERS-CRLB-PMLG-PMTR-DEVR-    -    -    -    -
   Exposure Data:  PLNT      TSTR-    -    -    -    -    -    -    -    -

   Data Collection Period:  73 through 79 (YY through YY)

   Include Circuit? : U         Originating Facilities : ZIS1-ZIS2-    -
   Nuclear Origin?  : Y         Failure Degree     :
   Bayesian Update? : Y         Failure Severity : C
   IRADAP Suitable? : Y         Include System?  : I  Systems : BE-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : U     Subsys. train :
----------------------------- REFERENCE INFORMATION ----------------------------
     Document Number : 21381        Detail Reference : 1.5-76
------------------------------ ADDITIONAL COMMENTS -----------------------------

--------------------------------------------------------------------------------
```

MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

Component: Valves, Motor Operator
Design: Unknown
Normal State: Normally Closed
Failure Mode: Fails to Operate

Data Record Number: 2

NUCLARR-CALCULATED-RATES

Median: 4.170E-003 Upper Tolerance: 7.284E-003 Aggregation Type: 1
Mean : 4.070E-003 Error Factor : 1.747E+000

REFERENCE-RAW-and-PROBABILITY-DATA

Number of Failures : 7 Number of Components : ------
Hours Per Component : ------------ Demand Per Component : --------
Total Component Hours: ------------ Total Component Demand: 1720

Probability/Rate : 3.720E-003 Type : MEAN
Variance : 2.710E-006 Units : F/D
Standard Deviation : ------E---- Distribution : DISCRETE

	Lower	Upper	-Confidence/Coverage-
Confidence Bounds :	------E----	------E----	-- %
Tolerance Bounds :	------E----	------E----	-- %
Error Factor :	------E----	Sided	-- %

Component Applications
1: Water, Borated Internal Environment
2:
3:

	Origin	Record Type
Failure Data :	PLNT	LERS-CRLB-PMLG-PMTR-DEVR- - - - - -
Exposure Data:	PLNT	TSTR- - - - - - - - - -

Data Collection Period: 73 through 79 (YY through YY)

Include Circuit? : U Originating Facilities : ZIS1-ZIS2- -
Nuclear Origin? : Y Failure Degree :
Bayesian Update? : Y Failure Severity : C
IRADAP Suitable? : Y Include System? : I Systems : CB- - - -
Safety Grade? : N
Primary Failure? : U Subsys. train :

REFERENCE INFORMATION

Document Number : 21381 Detail Reference : 1.5-76

ADDITIONAL COMMENTS

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Valves, Motor Operator
        Design: Unknown
  Normal State: Normally Open
  Failure Mode: Fails to Operate                      Data Record Number:   1

---------------------------NUCLARR-CALCULATED-RATES----------------------------
   Median:  6.274E-003   Upper Tolerance:  8.076E-003   Aggregation Type: 1
   Mean  :  6.245E-003   Error Factor   :  1.287E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
   Number of Failures    :     42           Number of Components   : ------
   Hours Per Component   : ------------     Demand Per Component   : --------
   Total Component Hours: ------------      Total Component Demand:     6725

   Probability/Rate    :  6.000E-003        Type          : MEDIAN
   Variance            :  9.400E-007        Units         : F/D
   Standard Deviation : ------E----         Distribution : DISCRETE

                          ----Lower----   ----Upper----   -Confidence/Coverage-
   Confidence Bounds   : ------E----      ------E----              -- %
   Tolerance Bounds    :  4.500E-003       7.700E-003              90 %
         Error Factor : ------E----          Sided                 -- %

-------------------------------------------------------------------------------
  Component           1: Unknown Internal Environment
  Applications        2:
                      3:
-------------------------------------------------------------------------------
                    Origin                          Record Type
  Failure Data :    PLNT      PMMR-LERS-INCD-    -    -    -    -    -    -
  Exposure Data:    PLNT      TSTR-PMTR-CRLB-    -    -    -    -    -    -

  Data Collection Period:  75 through 80 (YY through YY)

  Include Circuit? : U          Originating Facilities : NEE3-    -    -
  Nuclear Origin?  : Y          Failure Degree      :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?   : E  Systems : SG-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U      Subsys. train :

------------------------------ REFERENCE INFORMATION --------------------------
     Document Number : 21281        Detail Reference : 5-20

------------------------------- ADDITIONAL COMMENTS ---------------------------
  MOTOR OPERATED VALVES, EXCEPT CONDENSER CIRCULATING WATER.  MEAN =  6.40E-03/D

-------------------------------------------------------------------------------
```

268

```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

    Component: Valves, Motor Operator
       Design: Unknown
 Normal State: Normally Open
 Failure Mode: Fails to Operate                      Data Record Number:  2

 ---------------------------NUCLARR-CALCULATED-RATES---------------------------
   Median:  1.704E-001   Upper Tolerance:  2.995E-001   Aggregation Type: 1
   Mean  :  1.667E-001   Error Factor   :  1.757E+000

 ---------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
   Number of Failures    :      5         Number of Components  : ------
   Hours Per Component   : ------------   Demand Per Component  : --------
   Total Component Hours: ------------    Total Component Demand:       30

   Probability/Rate    :  7.800E-002      Type          : MEDIAN
   Variance            :  1.900E-003      Units         : F/D
   Standard Deviation : ------E----       Distribution : DISCRETE

                          ---Lower---      ---Upper---    -Confidence/Coverage-
   Confidence Bounds  : ------E----       ------E----               -- %
   Tolerance Bounds   :  2.700E-002        1.600E-001               90 %
         Error Factor : ------E----          Sided                  -- %

 ------------------------------------------------------------------------------
 Component          1: Water, High Purity/Demineralized - Int.
 Applications       2:
                    3:
 ------------------------------------------------------------------------------
                  Origin                          Record Type
 Failure Data :   PLNT       PMWR-LERS-INCD-      -   -   -   -   -   -
 Exposure Data:   PLNT       TSTR-PMTR-CRLB-      -   -   -   -   -   -

 Data Collection Period:  75 through 80 (YY through YY)

 Include Circuit? : U         Originating Facilities : NEE3-    -    -
 Nuclear Origin?  : Y         Failure Degree    :
 Bayesian Update? : Y         Failure Severity : C
 IRADAP Suitable? : Y         Include System?  : I  Systems : SG-  -  -  -
 Safety Grade?    : N
 Primary Failure? : U     Subsys. train :

 ----------------------------- REFERENCE INFORMATION --------------------------
     Document Number : 21281       Detail Reference : 5-20

 ------------------------------ ADDITIONAL COMMENTS ---------------------------
 MEAN = 1.00E-01/D

 ------------------------------------------------------------------------------
```

```
              MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Valves, Motor Operator
        Design: Unknown
  Normal State: Unspecified
  Failure Mode: Fails to Operate                          Data Record Number:   1

 ------------------------NUCLARR-CALCULATED-RATES--------------------------------
    Median:  1.254E-003   Upper Tolerance:  1.895E-003   Aggregation Type: 1
    Mean  :  1.238E-003   Error Factor   :  1.512E+000

 ----------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------------
    Number of Failures   :      14          Number of Components  : ------
    Hours Per Component  : ------------     Demand Per Component  : --------
    Total Component Hours: ------------     Total Component Demand:    11310

    Probability/Rate   :  1.550E-003        Type         : MEAN
    Variance           :  6.300E-008        Units        : F/D
    Standard Deviation : ------E----        Distribution : DISCRETE

                         ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds  : ------E----      ------E----               -- %
    Tolerance Bounds   : ------E----      ------E----               -- %
          Error Factor : ------E----          Sided                 -- %

 --------------------------------------------------------------------------------
  Component          1: Unknown Internal Environment
  Applications       2:
                     3:
 --------------------------------------------------------------------------------
                 Origin                    Record Type
  Failure Data :  PLNT      LERS-CRLB-PMLG-PMTR-DEVR-    -    -    -    -
  Exposure Data:  PLNT      TSTR-   -    -    -    -    -    -    -    -

  Data Collection Period:  73 through 79 (YY through YY)

  Include Circuit? : U          Originating Facilities : ZIS1-ZIS2-    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : Y          Failure Severity  : C
  IRADAP Suitable? : Y          Include System?   : E  Systems : BE-CB-  -  -
  Safety Grade?    : U
  Primary Failure? : U    Subsys. train :

 ---------------------------- REFERENCE INFORMATION -----------------------------
     Document Number : 21381        Detail Reference : 1.5-71

 ---------------------------- ADDITIONAL COMMENTS -------------------------------


 --------------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Valves, Motor Operator
      Design: Unknown
Normal State: Unspecified
Failure Mode: Fails to Operate                       Data Record Number:   2

-------------------------NUCLARR-CALCULATED-RATES-----------------------------
  Median:  2.516E-003   Upper Tolerance:  5.585E-003   Aggregation Type: 1
  Mean  :  2.379E-003   Error Factor   :  2.219E+000

--------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------------
  Number of Failures   :      3           Number of Components  : ------
  Hours Per Component  : ------------     Demand Per Component  : --------
  Total Component Hours: ------------     Total Component Demand:     1261

  Probability/Rate     :  2.320E-003      Type          : MEAN
  Variance             :  1.190E-006      Units         : F/D
  Standard Deviation : ------E----        Distribution  : DISCRETE

                         ---Lower---     ---Upper---    -Confidence/Coverage-
  Confidence Bounds  : ------E----     ------E----              -- %
  Tolerance Bounds   : ------E----     ------E----              -- %
       Error Factor  : ------E----        Sided                 -- %
------------------------------------------------------------------------------
Component            1: Unknown Internal Environment
Applications         2:
                     3:
------------------------------------------------------------------------------
                Origin                          Record Type
Failure Data :   PLNT       LERS-CRLB-PMLG-PMTR-SOCR-    -    -    -    -
Exposure Data:   PLNT       TSTR-   -    -    -    -    -    -    -    -

Data Collection Period:  73 through 79 (YY through YY)

Include Circuit? : U         Originating Facilities : IPS2-    -    -
Nuclear Origin?  : Y         Failure Degree    :
Bayesian Update? : Y         Failure Severity : C
IRADAP Suitable? : Y         Include System?  : I  Systems : AL-  -  -  -
Safety Grade?    : U
Primary Failure? : Y     Subsys. train :
-------------------------- REFERENCE INFORMATION -----------------------------
  Document Number : 20982       Detail Reference : 1.5-58
-------------------------- ADDITIONAL COMMENTS -------------------------------


------------------------------------------------------------------------------
```

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Valves, Motor Operator
      Design: Unknown
Normal State: Normally Closed
Failure Mode: Fails to Open                         Data Record Number:   1

--------------------------NUCLARR-CALCULATED-RATES---------------------------
  Median:  7.250E-003  Upper Tolerance:  1.100E-002  Aggregation Type: 1
  Mean  :  7.078E-003  Error Factor    :  1.517E+000

---------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
  Number of Failures     :      7       Number of Components  :     21
  Hours Per Component    : ------------ Demand Per Component  : --------
  Total Component Hours: ------------   Total Component Demand:      989

  Probability/Rate    :  7.070E-003     Type           : MEAN
  Variance            : ------E----     Units          : F/D
  Standard Deviation  : ------E----     Distribution   : BINOM

                        ----Lower----   ----Upper----   -Confidence/Coverage-
  Confidence Bounds   :  2.700E-003      1.100E-002            90 %
  Tolerance Bounds    : ------E----     ------E----            -- %
        Error Factor  : ------E----        Sided               -- %

-----------------------------------------------------------------------------
Component          1: Unknown Internal Environment
Applications       2:
                   3:
-----------------------------------------------------------------------------
                Origin                     Record Type
Failure Data :  PLNT      PMLG-CRLB-SURV-LERS-DEVR-OTHR-   -   -   -
Exposure Data:  PLNT      CRLB-SURV-   -   -   -   -   -   -   -   -

Data Collection Period:  70 through 79 (YY through YY)

Include Circuit? : U        Originating Facilities : BRP1-   -   -
Nuclear Origin?  : Y        Failure Degree    :
Bayesian Update? : N        Failure Severity  : C
IRADAP Suitable? : Y        Include System?   : I   Systems : ZZ-  -  -  -
Safety Grade?    : U
Primary Failure? : U     Subsys. train :

------------------------- REFERENCE INFORMATION -----------------------------
   Document Number : 20081        Detail Reference : III-11

-------------------------- ADDITIONAL COMMENTS ------------------------------
FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP.

-----------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Valves, Motor Operator
        Design: Unknown
  Normal State: Normally Closed
  Failure Mode: Fails to Open                            Data Record Number:  2

 ---------------------------NUCLARR-CALCULATED-RATES-----------------------------
    Median:  1.377E-002   Upper Tolerance:  2.800E-002   Aggregation Type: 1
    Mean  :  1.304E-002   Error Factor   :  2.033E+000

 ------------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures    :       3       Number of Components  :      4
    Hours Per Component   : ------------  Demand Per Component  : --------
    Total Component Hours: ------------   Total Component Demand:      230

    Probability/Rate    :  1.300E-002     Type          : MEAN
    Variance            : ------E----     Units         : F/D
    Standard Deviation : ------E----      Distribution : BINOM

                         ---Lower---     ---Upper---     -Confidence/Coverage-
    Confidence Bounds  :  2.200E-003      2.800E-002              90 %
    Tolerance Bounds   : ------E----     ------E----              -- %
         Error Factor  : ------E----         Sided                -- %

 ---------------------------------------------------------------------------------
  Component           1: Water, Borated Internal Environment
  Applications        2:
                      3:
 ---------------------------------------------------------------------------------
                  Origin                 Record Type
  Failure Data :   PLNT     PMLG-CRLB-SURV-LERS-DEVR-OTHR-    -    -    -
  Exposure Data:   PLNT     CRLB-SURV-  -    -    -    -    -    -    -    -

  Data Collection Period:  70 through 79 (YY through YY)

  Include Circuit? : U          Originating Facilities : BRP1-    -    -
  Nuclear Origin?  : Y          Failure Degree        :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : BG-BM-  -  -
  Safety Grade?    : Y
  Primary Failure? : U     Subsys. train :

 ------------------------- REFERENCE INFORMATION ---------------------------------
    Document Number : 20081       Detail Reference : III-11

 -------------------------- ADDITIONAL COMMENTS ----------------------------------
  FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP.

 ---------------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Valves, Motor Operator
        Design: Unknown
  Normal State: Normally Closed
  Failure Mode: Fails to Open                          Data Record Number:   3

 ---------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  5.309E-003  Upper Tolerance:  6.620E-003  Aggregation Type: 1
    Mean  :  5.276E-003  Error Factor   :  1.247E+000

 ---------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures   :     29           Number of Components  : ------
    Hours Per Component  : ------------     Demand Per Component  : --------
    Total Component Hours: ------------     Total Component Demand:     5497

    Probability/Rate   :  4.450E-003        Type         : MEAN
    Variance           :  6.400E-007        Units        : F/D
    Standard Deviation : ------E----        Distribution : BETA

                         ----Lower----   ----Upper----  -Confidence/Coverage-
    Confidence Bounds  : ------E----      6.620E-003            95 %
    Tolerance Bounds   : ------E----     ------E----            -- %
          Error Factor : ------E----        Sided               -- %

 ------------------------------------------------------------------------------
  Component          1: Unknown Internal Environment
  Applications       2:
                     3:
 ------------------------------------------------------------------------------
                  Origin                      Record Type
  Failure Data :   PLNT      UTDB-LERS-PMLG-SSLB-   -    -    -    -    -
  Exposure Data:   PLNT      DCCN-PMTR-RHLG-   -    -    -    -    -    -

  Data Collection Period:  71 through 84 (YY through YY)

  Include Circuit? : U          Originating Facilities : MNS1-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : E  Systems : NT-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U     Subsys. train :

 ------------------------------ REFERENCE INFORMATION --------------------------
     Document Number : 21185       Detail Reference : 3.1-5,12

 ------------------------------ ADDITIONAL COMMENTS ----------------------------
  MOV'S OUTSIDE DRYWELL

 ------------------------------------------------------------------------------
```

```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Valves, Motor Operator
        Design: Unknown
  Normal State: Normally Closed
  Failure Mode: Fails to Open                          Data Record Number:  4

 ------------------------NUCLARR-CALCULATED-RATES-------------------------
   Median:  1.400E-002  Upper Tolerance:  2.670E-002  Aggregation Type: 1
   Mean  :  1.355E-002  Error Factor   :  1.907E+000

 --------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
   Number of Failures   :      5          Number of Components  : ------
   Hours Per Component  : ------------    Demand Per Component  : --------
   Total Component Hours: ------------    Total Component Demand:      369

   Probability/Rate     :  3.790E-003     Type         : MEAN
   Variance             :  2.110E-006     Units        : F/D
   Standard Deviation : ------E----       Distribution : BETA

                         ---Lower---      ---Upper---    -Confidence/Coverage-
   Confidence Bounds  : ------E----       2.670E-002              95 %
   Tolerance Bounds   : ------E----       ------E----             -- %
         Error Factor : ------E----          Sided                -- %

 --------------------------------------------------------------------------
 Component          1: Unknown Internal Environment
 Applications       2:
                    3:
 --------------------------------------------------------------------------
                  Origin                   Record Type
 Failure Data :    PLNT      UTDB-LERS-PMLG-SSLB-   -   -   -   -   -
 Exposure Data:    PLNT      DCCN-PMTR-RHLG-    -   -   -   -   -   -   -

 Data Collection Period:  71 through 84 (YY through YY)

 Include Circuit? : U        Originating Facilities : MNS1-   -   -
 Nuclear Origin?  : Y        Failure Degree    :
 Bayesian Update? : Y        Failure Severity : C
 IRADAP Suitable? : Y        Include System?  : I  Systems : NT-  -  -  -
 Safety Grade?    : N
 Primary Failure? : U    Subsys. train :

 ------------------------ REFERENCE INFORMATION ---------------------------
    Document Number : 21185       Detail Reference : 3.1-5,12

 ------------------------ ADDITIONAL COMMENTS -----------------------------
 MOV'S INSIDE DRYWEL

 --------------------------------------------------------------------------
```

```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Valves, Motor Operator
        Design: Unknown
  Normal State: Normally Open
  Failure Mode: Spurious Close (Transfer Closed)          Data Record Number:   1

---------------------------NUCLARR-CALCULATED-RATES--------------------------------
    Median:  1.245E-007  Upper Tolerance:  9.912E-007   Aggregation Type: 1
    Mean  : +0.000E+000  Error Factor   :  7.964E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------------
    Number of Failures   :        0         Number of Components  : ------
    Hours Per Component  : ------------     Demand Per Component  : --------
    Total Component Hours:      1890000     Total Component Demand: --------

    Probability/Rate   :  5.400E-008        Type          : MEDIAN
    Variance           :  1.200E-014        Units         : F/H
    Standard Deviation : ------E----        Distribution  : DISCRETE

                          ----Lower----      ----Upper----    -Confidence/Coverage-
    Confidence Bounds  :  ------E----        ------E----              -- %
    Tolerance Bounds   :  5.800E-009         3.000E-007               90 %
         Error Factor  :  ------E----           Sided                 -- %

-----------------------------------------------------------------------------------
  Component          1: Unknown Internal Environment
  Applications       2:
                     3:
-----------------------------------------------------------------------------------
                   Origin                        Record Type
  Failure Data :    PLNT        PMWR-LERS-INCD-    -    -    -    -    -    -
  Exposure Data:    PLNT        TSTR-PMTR-CRLB-    -    -    -    -    -    -

  Data Collection Period:  75 through 80 (YY through YY)

  Include Circuit? : U          Originating Facilities : NEE3-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : Y          Failure Severity  : C
  IRADAP Suitable? : Y          Include System?   : I   Systems : AL-  -  -  -
  Safety Grade?    : U
  Primary Failure? : U     Subsys. train :

-------------------------------- REFERENCE INFORMATION ----------------------------
     Document Number : 21281        Detail Reference : 5-20

-------------------------------- ADDITIONAL COMMENTS ------------------------------
  MEAN = 1.20E-07/H

-----------------------------------------------------------------------------------
```

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

    Component: Valves, Motor Operator
       Design: Unknown
 Normal State: Normally Open
 Failure Mode: Spurious Close (Transfer Closed)       Data Record Number:  2

 ----------------------------NUCLARR-CALCULATED-RATES-------------------------
   Median:  2.119E-008  Upper Tolerance:  1.688E-007   Aggregation Type: 1
   Mean  : +0.000E+000  Error Factor    :  7.964E+000

 -----------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
   Number of Failures   :      0        Number of Components  : ------
   Hours Per Component  : ------------  Demand Per Component  : --------
   Total Component Hours:      11100000 Total Component Demand: --------

   Probability/Rate   :  5.280E-008     Type         : MEAN
   Variance           :  2.820E-015     Units        : F/H
   Standard Deviation : ------E----     Distribution : DISCRETE

                       ----Lower----   ----Upper----  -Confidence/Coverage-
   Confidence Bounds  : ------E----    ------E----              -- %
   Tolerance Bounds   : ------E----    ------E----              -- %
        Error Factor  : ------E----       Sided                 -- %

 ------------------------------------------------------------------------------
 Component          1: Unknown Internal Environment
 Applications       2:
                    3:
 ------------------------------------------------------------------------------
                 Origin                    Record Type
 Failure Data :   PLNT     LERS-CRLB-PMLG-PMTR-DEVR-    -    -    -    -
 Exposure Data:   PLNT     MOPR-TSTR-    -    -    -    -    -    -    -

 Data Collection Period:  73 through 79 (YY through YY)

 Include Circuit? : U        Originating Facilities : ZIS1-ZIS2-    -
 Nuclear Origin?  : Y        Failure Degree   :
 Bayesian Update? : Y        Failure Severity : C
 IRADAP Suitable? : Y        Include System?  : I  Systems : AL-  -  -  -
 Safety Grade?    : U
 Primary Failure? : U     Subsys. train :
 ------------------------- REFERENCE INFORMATION ------------------------------
   Document Number : 21381       Detail Reference : 1.5-71
 ------------------------- ADDITIONAL COMMENTS --------------------------------


 ------------------------------------------------------------------------------
```

```
             MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

    Component: Valves, Motor Operator
       Design: Unknown
 Normal State: Normally Open
 Failure Mode: Spurious Close (Transfer Closed)        Data Record Number:   3

-------------------------------NUCLARR-CALCULATED-RATES-------------------------------
   Median:  3.921E-008  Upper Tolerance:  3.122E-007  Aggregation Type: 1
   Mean  : +0.000E+000  Error Factor   :  7.964E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------------
   Number of Failures   :       0       Number of Components  : ------
   Hours Per Component  : ------------  Demand Per Component  : --------
   Total Component Hours:     6000000   Total Component Demand: --------

   Probability/Rate   :  7.400E-008     Type          : MEAN
   Variance           :  5.890E-015     Units         : F/H
   Standard Deviation : ------E----     Distribution  : DISCRETE

                        ----Lower----   ----Upper----  -Confidence/Coverage-
   Confidence Bounds  : ------E----     ------E----            -- %
   Tolerance Bounds   : ------E----     ------E----            -- %
         Error Factor : ------E----        Sided               -- %

--------------------------------------------------------------------------------------
 Component          1: Unknown Internal Environment
 Applications       2:
                    3:
--------------------------------------------------------------------------------------
                 Origin                        Record Type
 Failure Data :   PLNT      LERS-CRLB-PMLG-PMTR-SOCR-    -    -    -    -
 Exposure Data:   PLNT      MOPR-TSTR-   -    -    -    -    -    -    -

 Data Collection Period:  73 through 79 (YY through YY)

 Include Circuit? : U        Originating Facilities : IPS2-    -    -
 Nuclear Origin?  : Y        Failure Degree    :
 Bayesian Update? : Y        Failure Severity : C
 IRADAP Suitable? : Y        Include System?   : I  Systems : AL-  -  -  -
 Safety Grade?    : U
 Primary Failure? : Y     Subsys. train :

---------------------------- REFERENCE INFORMATION ----------------------------
   Document Number : 20982        Detail Reference : 1.5-58
----------------------------- ADDITIONAL COMMENTS -----------------------------


--------------------------------------------------------------------------------
```

```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Valves, Motor Operator
        Design: Unknown
  Normal State: Normally Closed
  Failure Mode: Spurious Open (Transfer Open)         Data Record Number:   1

---------------------------NUCLARR-CALCULATED-RATES----------------------------
    Median:  3.385E-007   Upper Tolerance:  2.696E-006   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  7.964E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures    :       0         Number of Components  : ------
    Hours Per Component   : ------------    Demand Per Component  : --------
    Total Component Hours:        695000    Total Component Demand: --------

    Probability/Rate    :  3.140E-008       Type          : MEAN
    Variance            :  1.560E-014       Units         : F/H
    Standard Deviation : ------E----        Distribution : DISCRETE

                          ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds  : ------E----        ------E----             -- %
    Tolerance Bounds   : ------E----        ------E----             -- %
          Error Factor : ------E----           Sided                -- %

-------------------------------------------------------------------------------
  Component          1: Unknown Internal Environment
  Applications       2:
                     3:
-------------------------------------------------------------------------------
                   Origin                      Record Type
  Failure Data :    PLNT      LERS-CRLB-PMLG-PMTR-DEVR-    -    -    -    -
  Exposure Data:    PLNT      MOPR-TSTR-    -    -    -    -    -    -    -

  Data Collection Period:  73 through 79 (YY through YY)

  Include Circuit? : U          Originating Facilities : ZIS1-ZIS2-     -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?   : I  Systems : AL-  -  -  -
  Safety Grade?    : U
  Primary Failure? : U    Subsys. train :

------------------------------ REFERENCE INFORMATION ---------------------------
    Document Number : 21381       Detail Reference : 1.5-72

------------------------------ ADDITIONAL COMMENTS -----------------------------


-------------------------------------------------------------------------------
```

```
       MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Valves, Motor Operator
      Design: Unknown
Normal State: Normally Closed
Failure Mode: Spurious Open (Transfer Open)           Data Record Number:   2

--------------------------NUCLARR-CALCULATED-RATES--------------------------
  Median:  3.346E-004   Upper Tolerance:  2.665E-003   Aggregation Type: 1
  Mean  : +0.000E+000   Error Factor   :  7.964E+000

---------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
  Number of Failures   :      0          Number of Components  : ------
  Hours Per Component  : ------------    Demand Per Component  : --------
  Total Component Hours:           703   Total Component Demand: --------

  Probability/Rate   :  1.990E-008       Type         : MEAN
  Variance           :  1.830E-013       Units        : F/H
  Standard Deviation : ------E----       Distribution : DISCRETE

                     ----Lower----    ----Upper----   -Confidence/Coverage-
  Confidence Bounds  : ------E----      ------E----                -- %
  Tolerance Bounds   : ------E----      ------E----                -- %
        Error Factor : ------E----         Sided                   -- %

----------------------------------------------------------------------------
Component          1: Unknown Internal Environment
Applications       2:
                   3:
----------------------------------------------------------------------------
                 Origin                     Record Type
Failure Data :    PLNT       LERS-CRLB-PMLG-PMTR-SOCR-    -    -    -    -
Exposure Data:    PLNT       MOPR-TSTR-    -    -    -    -    -    -    -

Data Collection Period:  73 through 79 (YY through YY)

Include Circuit? : U          Originating Facilities : IPS2-    -    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : Y          Failure Severity : C
IRADAP Suitable? : Y          Include System?  : I  Systems : AL-  -  -  -
Safety Grade?    : U
Primary Failure? : Y     Subsys. train :
----------------------------- REFERENCE INFORMATION ------------------------
   Document Number : 20982      Detail Reference : 1.5-58
------------------------------ ADDITIONAL COMMENTS -------------------------

----------------------------------------------------------------------------
```

```
         MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Valves, Motor Operator
      Design: Unknown
Normal State: Normally Closed
Failure Mode: Spurious Open (Transfer Open)          Data Record Number:   3

------------------------NUCLARR-CALCULATED-RATES-------------------------
  Median:  2.876E-004   Upper Tolerance:  2.290E-003   Aggregation Type: 1
  Mean  : +0.000E+000   Error Factor   :  7.964E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------
  Number of Failures    :       0       Number of Components  : ------
  Hours Per Component   : ------------  Demand Per Component  : --------
  Total Component Hours:          818   Total Component Demand: --------

  Probability/Rate    :  9.650E-008     Type          : MEAN
  Variance            :  3.750E-012     Units         : F/H
  Standard Deviation  : ------E----     Distribution  : DISCRETE

                        ---Lower---     ---Upper---   -Confidence/Coverage-
  Confidence Bounds   : ------E----     ------E----              -- %
  Tolerance Bounds    : ------E----     ------E----              -- %
        Error Factor  : ------E----        Sided                 -- %
-------------------------------------------------------------------------
Component            1: Unknown Internal Environment
Applications         2:
                     3:
-------------------------------------------------------------------------
                Origin                  Record Type
Failure Data :   PLNT      LERS-CRLB-PMLG-PMTR-SOCR-   -   -   -   -   -
Exposure Data:   PLNT      MOPR-TSTR-   -   -   -   -   -   -   -   -   -

Data Collection Period:  73 through 79 (YY through YY)

Include Circuit? : U       Originating Facilities : IPS2-    -    -
Nuclear Origin?  : Y       Failure Degree    :
Bayesian Update? : Y       Failure Severity : C
IRADAP Suitable? : Y       Include System?  : I   Systems : AL-  -  -  -
Safety Grade?    : U
Primary Failure? : Y    Subsys. train :
------------------------- REFERENCE INFORMATION -------------------------
  Document Number : 2U982       Detail Reference : 1.5-59
-------------------------- ADDITIONAL COMMENTS --------------------------

-------------------------------------------------------------------------
```

```
             MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Valves, Motor Operator
      Design: Unknown
Normal State: Unspecified
Failure Mode: Spurious Open (Transfer Open)         Data Record Number:   1

---------------------------NUCLARR-CALCULATED-RATES----------------------------
  Median:  9.488E-007   Upper Tolerance:  2.300E-006   Aggregation Type: 1
  Mean  :  7.968E-007   Error Factor   :  2.424E+000

---------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------------
  Number of Failures   :        1        Number of Components  :     21
  Hours Per Component  :          59760   Demand Per Component  : --------
  Total Component Hours:        1254960   Total Component Demand: --------

  Probability/Rate    :  8.810E-007     Type          : MEAN
  Variance            : ------E---      Units         : F/H
  Standard Deviation  : ------E--       Distribution  : GAMMA

                      ---Lower---     ---Upper---    -Confidence/Coverage-
  Confidence Bounds   :  5.400E-007     2.300E-006            90 %
  Tolerance Bounds    : ------E----    ------E----            -- %
       Error Factor   : ------E----       Sided               -- %
-------------------------------------------------------------------------------
Component           1: Unknown Internal Environment
Applications        2:
                    3:
-------------------------------------------------------------------------------
                Origin                      Record Type
Failure Data :   PLNT      PMLG-CRLB-SURV-LERS-DEVR-OTHR-    -    -    -
Exposure Data:   PLNT      CRLB-SURV-   -    -    -    -    -    -    -

Data Collection Period:  70 through 79 (YY through YY)

Include Circuit? : U        Originating Facilities : BRP1-    -    -
Nuclear Origin?  : Y        Failure Degree   :
Bayesian Update? : N        Failure Severity : C
IRADAP Suitable? : Y        Include System?  : I  Systems : ZZ-  -  -  -
Safety Grade?    : U
Primary Failure? : U     Subsys. train :
------------------------------ REFERENCE INFORMATION --------------------------
   Document Number : 20081       Detail Reference : III-11
------------------------------- ADDITIONAL COMMENTS ---------------------------
FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP.

-------------------------------------------------------------------------------
```

```
      MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Valves, Manual Operator (mechanical handwheel)
      Design: Unknown
Normal State: Normally Open
Failure Mode: Spurious Close (Transfer Closed)        Data Record Number:   1

-------------------------------NUCLARR-CALCULATED-RATES-------------------------------
  Median:  3.854E-007  Upper Tolerance:  1.258E-006  Aggregation Type: 1
  Mean  :  3.236E-007  Error Factor   :  3.265E+000

--------------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------------
  Number of Failures   :        1         Number of Components   : ------
  Hours Per Component  : ------------     Demand Per Component   : --------
  Total Component Hours:        3090000   Total Component Demand: --------

  Probability/Rate   :  3.800E-008        Type          : MEDIAN
  Variance           :  1.200E-014        Units         : F/H
  Standard Deviation : ------E----        Distribution : DISCRETE

                        ----Lower----    ----Upper----   -Confidence/Coverage-
  Confidence Bounds  : ------E----       ------E----              -- %
  Tolerance Bounds   :  4.800E-009        2.400E-007              90 %
       Error Factor : ------E----          Sided                 -- %

--------------------------------------------------------------------------------------
Component          1: Unknown Internal Environment
Applications       2:
                   3:
--------------------------------------------------------------------------------------
                Origin                         Record Type
Failure Data :   PLNT       PMWR-LERS-INCD-    -    -    -    -    -    -
Exposure Data:   PLNT       TSTR-PMTR-CRLB-    -    -    -    -    -    -

Data Collection Period:  75 through 80 (YY through YY)

Include Circuit? : U        Originating Facilities : NEE3-    -    -
Nuclear Origin?  : Y        Failure Degree    :
Bayesian Update? : Y        Failure Severity : C
IRADAP Suitable? : Y        Include System?  : I  Systems : AL-  -  -  -
Safety Grade?    : U
Primary Failure? : U    Subsys. train :

-------------------------------- REFERENCE INFORMATION --------------------------------
  Document Number : 21281       Detail Reference : 5-20

--------------------------------- ADDITIONAL COMMENTS ---------------------------------
MEAN = 8.90E-08/H

--------------------------------------------------------------------------------------
```

```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Valves, Manual Operator (mechanical handwheel)
        Design: Unknown
  Normal State: Normally Open
  Failure Mode: Spurious Close (Transfer Closed)        Data Record Number:   2

-----------------------------NUCLARR-CALCULATED-RATES----------------------------
    Median:  3.921E-008   Upper Tolerance:  3.122E-007   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  7.964E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures    :      0         Number of Components  : ------
    Hours Per Component   : ------------   Demand Per Component  : --------
    Total Component Hours:       6000000   Total Component Demand: --------

    Probability/Rate    :  7.400E-008      Type         : MEAN
    Variance            :  5.890E-015      Units        : F/H
    Standard Deviation : ------E----       Distribution : DISCRETE

                         ----Lower----   ----Upper----   -Confidence/Coverage-
    Confidence Bounds  : ------E----     ------E----                -- %
    Tolerance Bounds   : ------E----     ------E----                -- %
          Error Factor : ------E----        Sided                   -- %

----------------------------------------------------------------------------------
  Component          1: Unknown Internal Environment
  Applications       2:
                     3:
----------------------------------------------------------------------------------
                 Origin                        Record Type
  Failure Data :  PLNT      LERS-CRLB-PMLG-PMTR-SOCR-    -    -    -    -
  Exposure Data:  PLNT      MOPR-TSTR-    -    -    -    -    -    -    -

  Data Collection Period:  73 through 79 (YY through YY)

  Include Circuit? : U        Originating Facilities : IPS2-    -    -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : Y        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I  Systems : AL-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y    Subsys. train :

---------------------------- REFERENCE INFORMATION ------------------------------
     Document Number : 20982       Detail Reference : 1.5-58

----------------------------- ADDITIONAL COMMENTS -------------------------------



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```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Valves, Pneumatic Operator
      Design: Unknown
Normal State: Normally Closed
Failure Mode: Fails to Operate                      Data Record Number:   1

-------------------------NUCLARR-CALCULATED-RATES-------------------------
  Median:  2.352E-003   Upper Tolerance:  5.222E-003   Aggregation Type: 1
  Mean  :  2.224E-003   Error Factor   :  2.220E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------
  Number of Failures    :      3         Number of Components  : ------
  Hours Per Component   : ------------   Demand Per Component  : --------
  Total Component Hours: ------------    Total Component Demand:      1349

  Probability/Rate   :  1.000E-003       Type          : MEDIAN
  Variance           :  1.000E-006       Units         : F/D
  Standard Deviation : ------E----       Distribution  : DISCRETE

                      ----Lower----   ----Upper----   -Confidence/Coverage-
  Confidence Bounds  : ------E----    ------E----               -- %
  Tolerance Bounds   :  3.200E-004     3.100E-003               90 %
        Error Factor : ------E----       Sided                  -- %

--------------------------------------------------------------------------
Component          1: Unknown Internal Environment
Applications       2:
                   3:
--------------------------------------------------------------------------
                Origin                      Record Type
Failure Data :   PLNT      PMMR-LERS-INCD-    -   -   -   -   -   -
Exposure Data:   PLNT      TSTR-PMTR-CRLB-    -   -   -   -   -   -

Data Collection Period:  75 through 80 (YY through YY)

Include Circuit? : U        Originating Facilities : NEE3-    -    -
Nuclear Origin?  : Y        Failure Degree    :
Bayesian Update? : Y        Failure Severity : C
IRADAP Suitable? : Y        Include System?  : I  Systems : AL-  -  -  -
Safety Grade?    : U
Primary Failure? : U     Subsys. train :

------------------------- REFERENCE INFORMATION --------------------------
   Document Number : 21281       Detail Reference : 5-20

-------------------------- ADDITIONAL COMMENTS ---------------------------
MEAN = 1.60E-03/D

--------------------------------------------------------------------------
```

```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Valves, Pneumatic Operator
        Design: Unknown
  Normal State: Unspecified
  Failure Mode: Fails to Operate                       Data Record Number:   1

------------------------------NUCLARR-CALCULATED-RATES------------------------------
   Median:  2.061E-003   Upper Tolerance:  4.576E-003   Aggregation Type: 1
   Mean  :  1.948E-003   Error Factor   :  2.221E+000

--------------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------------
   Number of Failures   :      3          Number of Components  : ------
   Hours Per Component  : ------------    Demand Per Component  : --------
   Total Component Hours: ------------    Total Component Demand:      1540

   Probability/Rate   :  1.440E-003       Type         : MEAN
   Variance           :  7.930E-007       Units        : F/D
   Standard Deviation : ------E----       Distribution : DISCRETE

                        ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds  : ------E----      ------E----              -- %
   Tolerance Bounds   : ------E----      ------E----              -- %
         Error Factor : ------E----         Sided                 -- %

------------------------------------------------------------------------------------
 Component          1: Unknown Internal Environment
 Applications       2:
                    3:
------------------------------------------------------------------------------------
                Origin                      Record Type
 Failure Data :  PLNT      LERS-CRLB-PMLG-PMTR-DEVR-   -    -    -    -
 Exposure Data:  PLNT      TSTR-   -    -    -    -    -    -    -    -

 Data Collection Period:  73 through 79 (YY through YY)

 Include Circuit? : U         Originating Facilities : ZIS1-ZIS2-    -
 Nuclear Origin?  : Y         Failure Degree   :
 Bayesian Update? : Y         Failure Severity : C
 IRADAP Suitable? : Y         Include System?  : I  Systems : AL-  -  -  -
 Safety Grade?    : U
 Primary Failure? : U     Subsys. train :

----------------------------- REFERENCE INFORMATION ------------------------------
   Document Number : 21381        Detail Reference : 1.5-72
------------------------------- ADDITIONAL COMMENTS -------------------------------


------------------------------------------------------------------------------------
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286

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

    Component: Valves, Pneumatic Operator
       Design: Unknown
 Normal State: Unspecified
 Failure Mode: Fails to Operate                        Data Record Number:   2

--------------------------NUCLARR-CALCULATED-RATES-------------------------
   Median:  1.127E-003   Upper Tolerance:  3.721E-003   Aggregation Type: 1
   Mean  :  9.524E-004   Error Factor   :  3.302E+000

-----------------------REFERENCE-RAM-and-PROBABILITY-DATA-----------------
   Number of Failures   :       1          Number of Components  : ------
   Hours Per Component  : ------------     Demand Per Component  : --------
   Total Component Hours: ------------     Total Component Demand:     1050

   Probability/Rate   :  7.490E-004        Type          : MEAN
   Variance           :  4.010E-007        Units         : F/D
   Standard Deviation : ------E----        Distribution : DISCRETE

                        ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds  : ------E----      ------E----             -- %
   Tolerance Bounds   : ------E----      ------E----             -- %
         Error Factor : ------E----         Sided                -- %

---------------------------------------------------------------------------
 Component          1: Unknown Internal Environment
 Applications       2:
                    3:
---------------------------------------------------------------------------
                 Origin                 Record Type
 Failure Data :   PLNT      LERS-CRLB-PMLG-PMTR-SOCR-   -    -    -    -
 Exposure Data:   PLNT      TSTR-   -    -    -    -    -    -    -    -

 Data Collection Period:  73 through 79 (YY through YY)

 Include Circuit? : U        Originating Facilities : IPS2-    -    -
 Nuclear Origin?  : Y        Failure Degree    :
 Bayesian Update? : Y        Failure Severity : C
 IRADAP Suitable? : Y        Include System?  : I  Systems : AL-  -  -  -
 Safety Grade?    : U
 Primary Failure? : Y     Subsys. train :

------------------------- REFERENCE INFORMATION ---------------------------
   Document Number : 20982       Detail Reference : 1.5-59

-------------------------- ADDITIONAL COMMENTS ----------------------------


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```

```
MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Valves, Pneumatic Operator
      Design: Unknown
Normal State: Normally Open
Failure Mode: Spurious Close (Transfer Closed)        Data Record Number:   1

---------------------------NUCLARR-CALCULATED-RATES---------------------------
  Median:  6.138E-006   Upper Tolerance:  2.004E-005   Aggregation Type: 1
  Mean  :  5.155E-006   Error Factor   :  3.265E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
  Number of Failures    :        1       Number of Components   : ------
  Hours Per Component   : ------------   Demand Per Component   : --------
  Total Component Hours:        194000   Total Component Demand: --------

  Probability/Rate   :  3.000E-007       Type          : MEDIAN
  Variance           :  1.200E-012       Units         : F/H
  Standard Deviation : ------E----       Distribution : DISCRETE

                       ----Lower----   ----Upper----   -Confidence/Coverage-
  Confidence Bounds  : ------E----      ------E----                -- %
  Tolerance Bounds   :  3.900E-008       2.300E-006                90 %
        Error Factor : ------E----         Sided                   -- %

------------------------------------------------------------------------------
Component          1: Unknown Internal Environment
Applications       2:
                   3:
------------------------------------------------------------------------------
                Origin                        Record Type
Failure Data :   PLNT      PMWR-LERS-INCD-    -    -    -    -    -    -
Exposure Data:   PLNT      TSTR-PMTR-CRLB-    -    -    -    -    -    -

Data Collection Period:  75 through 80 (YY through YY)

Include Circuit? : U          Originating Facilities : NEE3-     -    -
Nuclear Origin?  : Y          Failure Degree     :
Bayesian Update? : Y          Failure Severity : C
IRADAP Suitable? : Y          Include System?  : I  Systems : AL-  -  -  -
Safety Grade?    : U
Primary Failure? : U     Subsys. train :

--------------------------- REFERENCE INFORMATION ----------------------------
  Document Number : 21281       Detail Reference : 5-20

---------------------------- ADDITIONAL COMMENTS -----------------------------
MEAN = 8.00E-07/H

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```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Valves, Pneumatic Operator
         Design: Unknown
   Normal State: Normally Open
   Failure Mode: Spurious Close (Transfer Closed)        Data Record Number:   2

-------------------------------NUCLARR-CALCULATED-RATES-------------------------------
    Median:  1.104E-007   Upper Tolerance:  8.796E-007   Aggregation Type: 1
    Mean   : +0.000E+000  Error Factor    :  7.964E+000

---------------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------------
    Number of Failures   :       0        Number of Components  : ------
    Hours Per Component  : ------------   Demand Per Component  : --------
    Total Component Hours:       2130000  Total Component Demand: --------

    Probability/Rate     :  1.120E-007    Type          : MEAN
    Variance             :  1.840E-014    Units         : F/H
    Standard Deviation   : ------E----    Distribution  : DISCRETE

                            ---Lower---     ---Upper---   -Confidence/Coverage-
    Confidence Bounds    : ------E----     ------E----               -- %
    Tolerance Bounds     : ------E----     ------E----               -- %
          Error Factor   : ------E----        Sided                  -- %
--------------------------------------------------------------------------------------
   Component           1: Unknown Internal Environment
   Applications        2:
                       3:
--------------------------------------------------------------------------------------
                  Origin                    Record Type
   Failure Data :  PLNT       LERS-CRLB-PMLG-PMTR-DEVR-    -    -    -    -
   Exposure Data:  PLNT       MOPR-TSTR-   -    -    -    -    -    -    -

   Data Collection Period:  73 through 79 (YY through YY)

   Include Circuit? : U          Originating Facilities : ZIS1-ZIS2-     -
   Nuclear Origin?  : Y          Failure Degree   :
   Bayesian Update? : Y          Failure Severity : C
   IRADAP Suitable? : Y          Include System?  : I  Systems : AL-  -  -  -
   Safety Grade?    : U
   Primary Failure? : U    Subsys. train :

---------------------------- REFERENCE INFORMATION -----------------------------
     Document Number : 21381       Detail Reference : 1.5-72

---------------------------- ADDITIONAL COMMENTS ------------------------------

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```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Valves, Pneumatic Operator
        Design: Unknown
  Normal State: Normally Open
  Failure Mode: Spurious Close (Transfer Closed)        Data Record Number:   3

 ------------------------------NUCLARR-CALCULATED-RATES------------------------------
    Median:  5.299E-007   Upper Tolerance:  4.220E-006   Aggregation Type: 1
    Mean   : +0.000E+000  Error Factor    :  7.964E+000

 -------------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
    Number of Failures    :       0          Number of Components   : ------
    Hours Per Component   : ------------     Demand Per Component   : --------
    Total Component Hours:        444000     Total Component Demand: --------

    Probability/Rate    :  1.710E-007        Type         : MEAN
    Variance            :  7.290E-014        Units        : F/H
    Standard Deviation : ------E----         Distribution : DISCRETE

                          ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----              -- %
    Tolerance Bounds    : ------E----      ------E----              -- %
          Error Factor : ------E----         Sided                  -- %

 -------------------------------------------------------------------------------------
  Component          1: Unknown Internal Environment
  Applications       2:
                     3:
 -------------------------------------------------------------------------------------
                Origin                        Record Type
  Failure Data :  PLNT         LERS-CRLB-PMLG-PMTR-SOCR-    -    -    -    -
  Exposure Data:  PLNT         MOPR-TSTR-   -    -    -    -    -    -    -

  Data Collection Period:  73 through 79 (YY through YY)

  Include Circuit? : U          Originating Facilities : IPS2-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?   : I  Systems : AL-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y     Subsys. train :

 ---------------------------------- REFERENCE INFORMATION ----------------------------
     Document Number : 20982        Detail Reference : 1.5-59

 ----------------------------------- ADDITIONAL COMMENTS -----------------------------


 -------------------------------------------------------------------------------------
```

```
              MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Valves, Pneumatic Operator
         Design: Unknown
   Normal State: Normally Closed
   Failure Mode: Spurious Open (Transfer Open)           Data Record Number:   1

-----------------------------NUCLARR-CALCULATED-RATES----------------------------
     Median:  6.358E-006   Upper Tolerance:  5.063E-005   Aggregation Type: 1
     Mean  : +0.000E+000   Error Factor   :  7.964E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
     Number of Failures    :       0       Number of Components  : ------
     Hours Per Component   : ------------  Demand Per Component  : --------
     Total Component Hours:        37000   Total Component Demand: --------

     Probability/Rate    :  7.300E-008     Type         : MEAN
     Variance            :  2.830E-013     Units        : F/H
     Standard Deviation : ------E----      Distribution : DISCRETE

                          ----Lower----    ----Upper----   -Confidence/Coverage-
     Confidence Bounds  : ------E----      ------E----               -- %
     Tolerance Bounds   : ------E----      ------E----               -- %
           Error Factor : ------E----         Sided                  -- %

----------------------------------------------------------------------------------
   Component             1: Unknown Internal Environment
   Applications          2:
                         3:
----------------------------------------------------------------------------------
                 Origin                       Record Type
   Failure Data :  PLNT      LERS-CRLB-PMLG-PMTR-SOCR-    -    -    -    -
   Exposure Data:  PLNT      MOPR-TSTR-   -    -    -    -    -    -    -

   Data Collection Period:  73 through 79 (YY through YY)

   Include Circuit? : U         Originating Facilities : IPS2-    -    -
   Nuclear Origin?  : Y         Failure Degree    :
   Bayesian Update? : Y         Failure Severity : C
   IRADAP Suitable? : Y         Include System?  : I  Systems : AL-  -  -  -
   Safety Grade?    : U
   Primary Failure? : Y    Subsys. train :

------------------------------ REFERENCE INFORMATION -----------------------------
     Document Number : 20982      Detail Reference : 1.5-59

------------------------------ ADDITIONAL COMMENTS -------------------------------


----------------------------------------------------------------------------------
```

```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Valves, Relief
        Design: Indirect Acting, Pilot Operated
  Normal State: Normally Open
  Failure Mode: Fails to Close                          Data Record Number:   1

 ---------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  3.774E-002  Upper Tolerance:  1.193E-001   Aggregation Type: 1
    Mean  :  3.226E-002  Error Factor    :  3.162E+000

 -----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures   :       1          Number of Components  : ------
    Hours Per Component  : ------------     Demand Per Component  : --------
    Total Component Hours: ------------     Total Component Demand:       31

    Probability/Rate   :  4.800E-003        Type         : MEDIAN
    Variance           :  1.600E-004        Units        : F/D
    Standard Deviation : ------E----        Distribution : DISCRETE

                        ---Lower---      ---Upper---   -Confidence/Coverage-
    Confidence Bounds  : ------E----     ------E----             -- %
    Tolerance Bounds   :  6.900E-004      3.000E-002             90 %
          Error Factor : ------E----        Sided                -- %

 -------------------------------------------------------------------------------
  Component          1: Unknown Internal Environment
  Applications       2:
                     3:
 -------------------------------------------------------------------------------
                 Origin                          Record Type
  Failure Data :  PLNT       PWWR-LERS-INCD-    -    -    -    -    -    -
  Exposure Data:  PLNT       TSTR-PMTR-CRLR-    -    -    -    -    -    -

  Data Collection Period:  75 through 80 (YY through YY)

  Include Circuit? : U          Originating Facilities : NEE3-    -    -
  Nuclear Origin?  : Y          Failure Degree   :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : AL-  -  -  -
  Safety Grade?    : U
  Primary Failure? : U    Subsys. train :

 --------------------------- REFERENCE INFORMATION -----------------------------
    Document Number : 21281        Detail Reference : 5-21
 ---------------------------- ADDITIONAL COMMENTS ------------------------------
  MEAN = 1.10E-02/D

 -------------------------------------------------------------------------------
```

```
         MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Valves, Relief
        Design: Indirect Acting, Pilot Operated
  Normal State: Normally Open
  Failure Mode: Fails to Close                         Data Record Number:  2

 ---------------------------NUCLARR-CALCULATED-RATES---------------------------
   Median:  2.195E-002  Upper Tolerance:  1.708E-001  Aggregation Type: 1
   Mean  : +0.000E+000  Error Factor   :  7.781E+000

 ----------------------REFERENCE-RAM-and-PROBABILITY-DATA----------------------
   Number of Failures     :       0       Number of Components   : ------
   Hours Per Component    : ------------  Demand Per Component   : --------
   Total Component Hours: ------------    Total Component Demand:       10

   Probability/Rate     :  3.300E-003     Type          : MEDIAN
   Variance             :  1.200E-005     Units         : F/D
   Standard Deviation : ------E----       Distribution : DISCRETE

                          ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds  : ------E----       ------E----              -- %
   Tolerance Bounds   :  1.100E-003        1.000E-002              90 %
         Error Factor : ------E----           Sided                -- %

 ------------------------------------------------------------------------------
  Component            1: Unknown Internal Environment
  Applications         2:
                       3:
 ------------------------------------------------------------------------------
                 Origin                           Record Type
  Failure Data :  PLNT       PMWR-LERS-INCD-   -    -    -    -    -    -
  Exposure Data:  PLNT       TSTR-PMTR-CRLB-   -    -    -    -    -    -

  Data Collection Period:  75 through 80 (YY through YY)

  Include Circuit? : U          Originating Facilities : NEE3-    -    -
  Nuclear Origin?  : Y          Failure Degree     :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I   Systems : AP-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U     Subsys. train :

 -------------------------- REFERENCE INFORMATION ----------------------------
    Document Number : 21281      Detail Reference : 5-21

 --------------------------- ADDITIONAL COMMENTS -----------------------------
  MEAN = 4.80E-03/D

 -----------------------------------------------------------------------------
```

MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

```
   Component: Valves, Relief
      Design: Indirect Acting, Pilot Operated
Normal State: Normally Closed
Failure Mode: Fails to Open                           Data Record Number:   1

---------------------------NUCLARR-CALCULATED-RATES----------------------------
  Median:  7.262E-003  Upper Tolerance:  5.961E-002  Aggregation Type: 1
  Mean  : +0.000E+000  Error Factor   :  8.208E+000

------------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
  Number of Failures   :      0          Number of Components   : ------
  Hours Per Component  : ------------    Demand Per Component   : --------
  Total Component Hours: ------------    Total Component Demand:        31

  Probability/Rate    :  2.300E-003      Type         : MEDIAN
  Variance            :  4.300E-005      Units        : F/D
  Standard Deviation  : ------E----      Distribution : DISCRETE

                       ----Lower----   ----Upper----   -Confidence/Covarage-
  Confidence Bounds   : ------E----     ------E----             -- %
  Tolerance Bounds    :  2.100E-004     1.100E-002              90 %
        Error Factor  : ------E----        Sided                -- %

-------------------------------------------------------------------------------
Component          1: Unknown Internal Environment
Applications       2:
                   3:
-------------------------------------------------------------------------------
                 Origin                          Record Type
Failure Data :    PLNT        PMWR-LERS-INCD-    -    -    -    -    -    -
Exposure Data:    PLNT        TSTR-PMTR-CRLB-    -    -    -    -    -    -

Data Collection Period:  75 through 80 (YY through YY)

Include Circuit? : U          Originating Facilities : NEE3-    -    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : Y          Failure Severity : C
IRADAP Suitable? : Y          Include System?  : I  Systems : AL-   -   -   -
Safety Grade?    : U
Primary Failure? : U     Subsys. train :
---------------------------- REFERENCE INFORMATION ----------------------------
  Document Number : 21281      Detail Reference : 5-21
----------------------------- ADDITIONAL COMMENTS -----------------------------
MEAN = 4.90E-03/D

-------------------------------------------------------------------------------
```

```
MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

  Component: Valves, Relief
     Design: Indirect Acting, Pilot Operated
Normal State: Normally Closed
Failure Mode: Fails to Open                         Data Record Number:   2

--------------------------NUCLARR-CALCULATED-RATES-------------------------
   Median:  2.195E-002  Upper Tolerance:  1.708E-001  Aggregation Type: 1
   Mean   : +0.000E+000  Error Factor   :  7.781E+000

---------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
   Number of Failures   :        0          Number of Components  : ------
   Hours Per Component  : ------------      Demand Per Component  : --------
   Total Component Hours: ------------      Total Component Demand:       10

   Probability/Rate    :  9.200E-005        Type          : MEDIAN
   Variance            :  3.500E-007        Units         : F/D
   Standard Deviation  : ------E----        Distribution  : DISCRETE

                        ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds   : ------E----      ------E----           -- %
   Tolerance Bounds    :  7.400E-006      8.000E-004            90 %
         Error Factor  : ------E----        Sided               -- %

---------------------------------------------------------------------------
 Component            1: Unknown Internal Environment
 Applications         2:
                      3:
---------------------------------------------------------------------------
                Origin                           Record Type
 Failure Data :  PLNT        PMWR-LERS-INCD-     -   -   -   -   -   -
 Exposure Data:  PLNT        TSTR-PMTR-CRLB-     -   -   -   -   -   -

 Data Collection Period:  75 through 80 (YY through YY)

 Include Circuit? : U           Originating Facilities : NEE3-    -    -
 Nuclear Origin?  : Y           Failure Degree    :
 Bayesian Update? : Y           Failure Severity  : C
 IRADAP Suitable? : Y           Include System?   : I  Systems : AP-  -  -  -
 Safety Grade?    : N
 Primary Failure? : U      Subsys. train :                    -

------------------------------ REFERENCE INFORMATION ----------------------
   Document Number : 21281       Detail Reference : 5-21

------------------------------ ADDITIONAL COMMENTS ------------------------
 MEAN = 2.70E-04/D

---------------------------------------------------------------------------
```

```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Valves, Relief
         Design: Indirect Acting, Pilot Operated
   Normal State: Normally Closed
   Failure Mode: Spurious Open (Transfer Open)         Data Record Number:   1

 ---------------------------NUCLARR-CALCULATED-RATES--------------------------
     Median:  3.524E-006   Upper Tolerance:  8.921E-006   Aggregation Type: 1
     Mean  :  3.231E-006   Error Factor   :  2.532E+000

 -----------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
     Number of Failures   :        2        Number of Components  : ------
     Hours Per Component  : ------------    Demand Per Component  : --------
     Total Component Hours:       619000    Total Component Demand: --------

     Probability/Rate   :  1.630E-006       Type          : MEAN
     Variance           :  1.810E-012       Units         : F/H
     Standard Deviation : ------E----       Distribution  : DISCRETE

                          ---Lower---    ---Upper---    -Confidence/Coverage-
     Confidence Bounds  : ------E----    ------E----               -- %
     Tolerance Bounds   : ------E----    ------E----               -- %
          Error Factor  : ------E----       Sided                  -- %

 -----------------------------------------------------------------------------
   Component          1: Unknown Internal Environment
   Applications       2:
                      3:
 -----------------------------------------------------------------------------
                 Origin                        Record Type
   Failure Data :  PLNT       LERS-CRLB-PMLG-PMTR-DEVR-   -   -   -   -
   Exposure Data:  PLNT       MOPR-TSTR-  -   -   -   -   -   -   -   -

   Data Collection Period:  73 through 79 (YY through YY)

   Include Circuit? : U        Originating Facilities : ZIS1-ZIS2-    -
   Nuclear Origin?  : Y        Failure Degree    :
   Bayesian Update? : Y        Failure Severity  : C
   IRADAP Suitable? : Y        Include System?   : I  Systems : AL-  -  -  -
   Safety Grade?    : U
   Primary Failure? : U    Subsys. train :

 ------------------------- REFERENCE INFORMATION -----------------------------
     Document Number : 21381      Detail Reference : 1.5-71

 -------------------------- ADDITIONAL COMMENTS ------------------------------


 -----------------------------------------------------------------------------
```

```
          MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Valves, Relief
        Design: Indirect Acting, Unknown Operator
  Normal State: Normally Closed
  Failure Mode: Spurious Open (Transfer Open)          Data Record Number:   1

 -----------------------------NUCLARR-CALCULATED-RATES-----------------------------
    Median:  3.956E-006   Upper Tolerance:  1.292E-005   Aggregation Type: 1
    Mean  :  3.322E-006   Error Factor   :  3.265E+000

 --------------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
    Number of Failures    :        1      Number of Components   : ------
    Hours Per Component   : ------------  Demand Per Component   : --------
    Total Component Hours:        301000  Total Component Demand: --------

    Probability/Rate     :  2.560E-006     Type          : MEAN
    Variance             :  4.810E-012     Units         : F/H
    Standard Deviation : ------E----       Distribution : DISCRETE

                          ----Lower----   ----Upper----  -Confidence/Coverage-
    Confidence Bounds  : ------E----     ------E----               -- %
    Tolerance Bounds   : ------E----     ------E----               -- %
          Error Factor : ------E----         Sided                 -- %

 ---------------------------------------------------------------------------------
  Component          1: Unknown Internal Environment
  Applications       2:
                     3:
 ---------------------------------------------------------------------------------
                   Origin                   Record Type
  Failure Data :    PLNT       LERS-CRLB-PMLG-PMTR-SOCR-   -    -    -    -
  Exposure Data:    PLNT       MOPR-TSTR-   -    -    -    -    -    -    -

  Data Collection Period:  73 through 79 (YY through YY)

  Include Circuit? : U        Originating Facilities : IPS2-    -    -
  Nuclear Origin?  : Y        Failure Degree     :
  Bayesian Update? : Y        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I  Systems : AL-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y     Subsys. train :
 ------------------------------ REFERENCE INFORMATION ----------------------------
    Document Number : 20982        Detail Reference : 1.5-58
 ------------------------------- ADDITIONAL COMMENTS -----------------------------

 ---------------------------------------------------------------------------------
```

```
               MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/02/03

     Component: Valves, Relief
        Design: Unknown
  Normal State: Normally Closed
  Failure Mode: Spurious Open (Transfer Open)          Data Record Number:   1

-------------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  4.000E-006   Upper Tolerance: ------E----   Aggregation Type: 6
    Mean  : ------E----   Error Factor   : ------E----

--------------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures    : ------          Number of Components  : ------
    Hours Per Component   : ------------    Demand Per Component  : --------
    Total Component Hours: ------------     Total Component Demand: --------

    Probability/Rate   :  4.000E-006        Type         : MEDIAN
    Variance           : ------E----        Units        : F/H
    Standard Deviation : ------E----        Distribution : OTHER

                         ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds  : ------E----      ------E----              -- %
    Tolerance Bounds   : ------E----      ------E----              -- %
          Error Factor : ------E----        Sided                  -- %
-----------------------------------------------------------------------------------
  Component          1:
  Applications       2:
                     3:
-----------------------------------------------------------------------------------
                Origin                         Record Type
  Failure Data :  PLNT      LERS-   -    -    -    -    -    -    -    -
  Exposure Data:                    -    -    -    -    -    -    -    -    -

  Data Collection Period:  76 through 80 (YY through YY)

  Include Circuit? :           Originating Facilities :     -    -    -
  Nuclear Origin?  : Y         Failure Degree   :
  Bayesian Update? : N         Failure Severity : C
  IRADAP Suitable? : U         Include System?  :    Systems :   -   -   -   -
  Safety Grade?    :
  Primary Failure? : N    Subsys. train :
-------------------------------- REFERENCE INFORMATION ----------------------------
     Document Number :  5383       Detail Reference : 1030
---------------------------------- ADDITIONAL COMMENTS ----------------------------
  OTHR - SEE SUPP.REF.  For BWR plants.

-----------------------------------------------------------------------------------
```

```
         MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/02/03

     Component: Valves, Solenoid Operator
        Design: Unknown
  Normal State: Unspecified
  Failure Mode: Fails to Close                         Data Record Number:   1

 ----------------------------NUCLARR-CALCULATED-RATES----------------------------
    Median:  9.400E-007  Upper Tolerance:  2.104E-006  Aggregation Type: 5
    Mean  :  1.060E-006  Error Factor   :  2.238E+000

 -------------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
    Number of Failures   : ------       Number of Components  : ------
    Hours Per Component  : ------------ Demand Per Component  : --------
    Total Component Hours: ------------ Total Component Demand: --------

    Probability/Rate   :  9.400E-007    Type         : MEDIAN
    Variance           : ------E----    Units        : F/D
    Standard Deviation : ------E----    Distribution : OTHER

                         ---Lower---    ---Upper---   -Confidence/Coverage-
    Confidence Bounds  : ------E----    ------E----              -- %
    Tolerance Bounds   :  1.800E-007     4.270E-006              60 %
          Error Factor : ------E----       Sided                 -- %
 --------------------------------------------------------------------------------
  Component          1: Unknown Internal Environment
  Applications       2:
                     3:
 --------------------------------------------------------------------------------
                 Origin                        Record Type
  Failure Data :  PLNT       OTHR-   -   -   -   -   -   -   -   -
  Exposure Data:                 -   -   -   -   -   -   -   -   -

  Data Collection Period:     through 80 (YY through YY)

  Include Circuit? :          Originating Facilities :    -   -   -
  Nuclear Origin?  :          Failure Degree   :
  Bayesian Update? : N        Failure Severity : C
  IRADAP Suitable? : U        Include System?  :     Systems :   -  -  -  -
  Safety Grade?    :
  Primary Failure? : N     Subsys. train :
 ------------------------------ REFERENCE INFORMATION ---------------------------
     Document Number :  5383      Detail Reference : 448
 ------------------------------- ADDITIONAL COMMENTS ----------------------------
  OTHR - SEE SUPP.REF.

 --------------------------------------------------------------------------------
```

```
            MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/02/03

     Component: Valves, Solenoid Operator
        Design: Unknown
  Normal State: Unspecified
  Failure Mode: Fails to Open                             Data Record Number:   1

-----------------------------NUCLARR-CALCULATED-RATES----------------------------
    Median:  9.400E-007  Upper Tolerance:  2.107E-006   Aggregation Type: 5
    Mean  :  1.060E-006  Error Factor   :  2.241E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures   : ------           Number of Components   : ------
    Hours Per Component  : ------------     Demand Per Component   : --------
    Total Component Hours: ------------     Total Component Demand: --------

    Probability/Rate   :  9.400E-007        Type         : MEDIAN
    Variance           : ------E----        Units        : F/D
    Standard Deviation : ------E----        Distribution : OTHER

                         ---Lower---     ---Upper---   -Confidence/Coverage-
    Confidence Bounds  : ------E----     ------E----              -- %
    Tolerance Bounds   :  1.800E-007      4.280E-006              60 %
          Error Factor : ------E----        Sided                 -- %

----------------------------------------------------------------------------------
  Component          1: Unknown Internal Environment
  Applications       2:
                     3:
----------------------------------------------------------------------------------
                Origin                      Record Type
  Failure Data :  PLNT      OTHR-   -    -    -    -    -    -    -    -
  Exposure Data:                -   -    -    -    -    -    -    -    -

  Data Collection Period:       through 80 (YY through YY)

  Include Circuit? :            Originating Facilities :    -    -    -
  Nuclear Origin?  :            Failure Degree    :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : U          Include System?  :    Systems :   -   -   -   -
  Safety Grade?    :
  Primary Failure? : N     Subsys. train :

-------------------------------- REFERENCE INFORMATION ---------------------------
    Document Number :  5383        Detail Reference : 448

---------------------------------- ADDITIONAL COMMENTS ---------------------------
  OTHR - SEE SUPP.REF.

----------------------------------------------------------------------------------
```

```
              MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Valves, Unknown Operator
      Design: Unknown
Normal State: Normally Open
Failure Mode: Fails to Close                         Data Record Number:  1

----------------------------NUCLARR-CALCULATED-RATES---------------------------
  Median:  2.602E-002  Upper Tolerance:  3.797E-002  Aggregation Type: 1
  Mean  :  2.576E-002  Error Factor    :  1.459E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
  Number of Failures   :     16          Number of Components  :     66
  Hours Per Component  : ------------    Demand Per Component  : --------
  Total Component Hours: ------------    Total Component Demand:      621

  Probability/Rate   :  2.570E-002       Type         : MEAN
  Variance           : ------E----       Units        : F/D
  Standard Deviation : ------E----       Distribution :

                       ---Lower---     ---Upper---    -Confidence/Coverage-
  Confidence Bounds  : ------E----     ------E----              -- %
  Tolerance Bounds   : ------E----     ------E----              -- %
        Error Factor : ------E----        Sided                 -- %
-------------------------------------------------------------------------------
Component          1: Unknown Internal Environment
Applications       2:
                   3:
-------------------------------------------------------------------------------
                Origin                        Record Type
Failure Data :   PLNT      PMLG-CRLB-SURV-LERS-DEVR-OTHR-    -    -    -
Exposure Data:   PLNT      CRLB-SURV-  -    -    -    -    -    -    -    -

Data Collection Period:  70 through 79 (YY through YY)

Include Circuit? : U          Originating Facilities : BRP1-    -    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : N          Failure Severity : C
IRADAP Suitable? : N          Include System?  : I  Systems : ZZ-  -  -  -
Safety Grade?    : U
Primary Failure? : U    Subsys. train :
----------------------------- REFERENCE INFORMATION ---------------------------
  Document Number : 20081        Detail Reference : III-11
------------------------------ ADDITIONAL COMMENTS ----------------------------
FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP.;      DEMAND COU
NT IS TOO LOW;
-------------------------------------------------------------------------------
```

```
              MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Valves, Unknown Operator
         Design: Unknown
   Normal State: Normally Open
   Failure Mode: Fails to Close                          Data Record Number:   2

--------------------------NUCLARR-CALCULATED-RATES-------------------------------
     Median:  8.431E-002  Upper Tolerance:  1.100E-001   Aggregation Type: 1
     Mean  :  8.370E-002  Error Factor   :  1.305E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
     Number of Failures   :     19          Number of Components  :     19
     Hours Per Component  : ------------    Demand Per Component  : --------
     Total Component Hours: ------------    Total Component Demand:      227

     Probability/Rate   :  8.370E-002       Type         : MEAN
     Variance           : ------E----       Units        : F/D
     Standard Deviation : ------E----       Distribution : BINOM

                          ----Lower----    ----Upper----   -Confidence/Coverage-
     Confidence Bounds  :  5.300E-002       1.100E-001              90 %
     Tolerance Bounds   : ------E----      ------E----              -- %
           Error Factor : ------E----         Sided                 -- %

---------------------------------------------------------------------------------
   Component           1: Unknown Internal Environment
   Applications        2:
                       3:
---------------------------------------------------------------------------------
                  Origin                  Record Type
   Failure Data :  PLNT      PMLG-CRLB-SURV-LERS-DEVR-OTHR-    -    -    -
   Exposure Data:  PLNT      CRLB-SURV-   -    -    -    -    -    -    -

   Data Collection Period:  70 through 79 (YY through YY)

   Include Circuit? : U         Originating Facilities : BRP1-    -    -
   Nuclear Origin?  : Y         Failure Degree    :
   Bayesian Update? : N         Failure Severity : C
   IRADAP Suitable? : Y         Include System?  : I   Systems : JM-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : U     Subsys. train :

---------------------------- REFERENCE INFORMATION -------------------------------
     Document Number : 20081        Detail Reference : III-11

------------------------------ ADDITIONAL COMMENTS -------------------------------
   FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP.

---------------------------------------------------------------------------------
```

MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

```
  Component: Valves, Unknown Operator
     Design: Unknown
Normal State: Normally Closed
Failure Mode: Fails to Operate                       Data Record Number:   1

─────────────────────────NUCLARR-CALCULATED-RATES─────────────────────────
  Median:  1.229E-004   Upper Tolerance:  1.700E-004   Aggregation Type: 1
  Mean  :  1.212E-004   Error Factor   :  1.383E+000

───────────────────────REFERENCE-RAW-and-PROBABILITY-DATA─────────────────
  Number of Failures    :      18        Number of Components   : ------
  Hours Per Component   : ------------   Demand Per Component   : --------
  Total Component Hours:       148479    Total Component Demand: --------

  Probability/Rate    :  2.480E-004      Type          : MEAN
  Variance            :  2.340E-008      Units         : F/H
  Standard Deviation : ------E----       Distribution : GAMMA

                        ───Lower───     ───Upper───   -Confidence/Coverage-
  Confidence Bounds   : ------E----      1.700E-004           95 %
  Tolerance Bounds    : ------E----     ------E----           -- %
        Error Factor : ------E----        Sided               -- %

──────────────────────────────────────────────────────────────────────────
Component         1: Water, High Purity/Demineralized - Int.
Applications      2:
                  3:
──────────────────────────────────────────────────────────────────────────
                  Origin                   Record Type
Failure Data :     PLNT       UTDB-LERS-PMLG-SSLB-   -    -    -    -    -
Exposure Data:     PLNT       DCCN-PMTR-RHLG-   -    -    -    -    -    -

Data Collection Period:  71 through 84 (YY through YY)

Include Circuit? : U         Originating Facilities : MNS1-    -   -
Nuclear Origin?  : Y         Failure Degree    :
Bayesian Update? : Y         Failure Severity : C
IRADAP Suitable? : Y         Include System?  : I  Systems : SJ-  -  -  -
Safety Grade?    : N
Primary Failure? : U    Subsys. train :

──────────────────────── REFERENCE INFORMATION ───────────────────────────
  Document Number : 21185        Detail Reference : 3.1-7,12

─────────────────────────── ADDITIONAL COMMENTS ──────────────────────────

──────────────────────────────────────────────────────────────────────────
```

```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Valves, Unknown Operator
        Design: Unknown
  Normal State: Normally Closed
  Failure Mode: Fails to Open                        Data Record Number:   1

------------------------------NUCLARR-CALCULATED-RATES------------------------------
    Median:  1.472E-001  Upper Tolerance:  2.900E-001   Aggregation Type: 1
    Mean  :  1.429E-001  Error Factor    :  1.970E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
    Number of Failures    :      4           Number of Components  :       1
    Hours Per Component   : ------------     Demand Per Component  : --------
    Total Component Hours: ------------      Total Component Demand:       28

    Probability/Rate   :  1.420E-001         Type         : MEAN
    Variance           : ------E----         Units        : F/D
    Standard Deviation : ------E----         Distribution : F

                         ---Lower---      ---Upper---    -Confidence/Coverage-
    Confidence Bounds  :  5.000E-002       2.900E-001              90 %
    Tolerance Bounds   : ------E----      ------E----              -- %
          Error Factor : ------E----         Sided                 -- %

------------------------------------------------------------------------------------
  Component         1: Steam Internal Environment
  Applications      2:
                    3:
------------------------------------------------------------------------------------
                 Origin                         Record Type
  Failure Data :  PLNT       PMLG-CRLB-SURV-LERS-DEVR-OTHR-    -    -    -
  Exposure Data:  PLNT       CRLB-SURV-  -    -    -    -    -    -    -    -

  Data Collection Period:  70 through 79 (YY through YY)

  Include Circuit? : U         Originating Facilities : BRP1-    -    -
  Nuclear Origin?  : Y         Failure Degree    :
  Bayesian Update? : N         Failure Severity  : C
  IRADAP Suitable? : Y         Include System?   : I  Systems : JI-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U    Subsys. train :

--------------------------- REFERENCE INFORMATION ----------------------------------
     Document Number : 20081       Detail Reference : III-11

---------------------------- ADDITIONAL COMMENTS -----------------------------------
  FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP.

------------------------------------------------------------------------------------
```

```
        MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

    Component: Valves, Unknown Operator
       Design: Unknown
 Normal State: Normally Closed
 Failure Mode: Fails to Open                       Data Record Number:   2

------------------------NUCLARR-CALCULATED-RATES---------------------------
   Median:  2.155E-002   Upper Tolerance:  3.151E-002   Aggregation Type: 1
   Mean  :  2.133E-002   Error Factor    :  1.462E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------
   Number of Failures    :      16       Number of Components  :     66
   Hours Per Component   : ------------  Demand Per Component  : --------
   Total Component Hours: ------------   Total Component Demand:      750

   Probability/Rate    :  2.130E-002     Type           : MEAN
   Variance            : ------E----     Units          : F/D
   Standard Deviation : ------E----      Distribution :

                         ----Lower----   ----Upper----  -Confidence/Coverage-
   Confidence Bounds  : ------E----     ------E----                  -- %
   Tolerance Bounds   : ------E----     ------E----                  -- %
        Error Factor : ------E----         Sided                     -- %

---------------------------------------------------------------------------
 Component          1: Unknown Internal Environment
 Applications       2:
                    3:
---------------------------------------------------------------------------
                Origin                    Record Type
 Failure Data :  PLNT      PMLG-CRLB-SURV-LERS-DEVR-OTHR-    -    -    -
 Exposure Data:  PLNT      CRLB-SURV-   -    -    -    -    -    -    -

 Data Collection Period:  70 through 79 (YY through YY)

 Include Circuit? : U          Originating Facilities : BRP1-    -    -
 Nuclear Origin?  : Y          Failure Degree    :
 Bayesian Update? : N          Failure Severity : C
 IRADAP Suitable? : N          Include System?  : I  Systems : ZZ-  -  -  -
 Safety Grade?    : U
 Primary Failure? : U     Subsys. train :
------------------------ REFERENCE INFORMATION ----------------------------
   Document Number : 20081        Detail Reference : III-11
------------------------ ADDITIONAL COMMENTS ------------------------------
 FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP.;     DEMAND COU
 NT IS TOO LOW;
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```
       MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Valves, Unknown Operator
      Design: Unknown
Normal State: Normally Closed
Failure Mode: Fails to Open                         Data Record Number:   3

-----------------------NUCLARR-CALCULATED-RATES-----------------------------
  Median:  1.736E-002  Upper Tolerance:  5.000E-002  Aggregation Type: 1
  Mean  :  1.600E-002  Error Factor   :  2.881E+000

-------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
  Number of Failures   :       2        Number of Components  : ------
  Hours Per Component  : ------------   Demand Per Component  : --------
  Total Component Hours: ------------   Total Component Demand:       125

  Probability/Rate   :  1.600E-002      Type         : MEAN
  Variance           : ------E----      Units        : F/D
  Standard Deviation : ------E----      Distribution : BINOM

                      ---Lower---     ---Upper---    -Confidence/Coverage-
  Confidence Bounds  :  2.840E-003      5.000E-002              90 %
  Tolerance Bounds   : ------E----     ------E----              -- %
        Error Factor : ------E----        Sided                 -- %

----------------------------------------------------------------------------
Component            1: Water, High Purity/Demineralized - Int.
Applications         2:
                     3:
----------------------------------------------------------------------------
                 Origin                  Record Type
Failure Data :    PLNT     PMLG-CRLB-SURV-LERS-DEVR-OTHR-    -    -    -
Exposure Data:    PLNT     CRLB-SURV-   -    -    -    -    -    -    -

Data Collection Period:  70 through 79 (YY through YY)

Include Circuit? : U         Originating Facilities : BRP1-    -    -
Nuclear Origin?  : Y         Failure Degree     :
Bayesian Update? : N         Failure Severity : C
IRADAP Suitable? : Y         Include System?  : I  Systems : BL-  -  -  -
Safety Grade?    : U
Primary Failure? : U    Subsys. train :

----------------------- REFERENCE INFORMATION -----------------------------
   Document Number : 20081        Detail Reference : III-11

----------------------- ADDITIONAL COMMENTS -------------------------------
FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP.

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           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

    Component: Valves, Unknown Operator
       Design: Unknown
 Normal State: Normally Closed
 Failure Mode: Fails to Open                    Data Record Number:    4

-------------------------NUCLARR-CALCULATED-RATES-----------------------------
   Median:  5.494E-003  Upper Tolerance:  1.200E-002  Aggregation Type: 1
   Mean  :  4.651E-003  Error Factor   :  2.184E+000

---------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
   Number of Failures    :      1        Number of Components  : ------
   Hours Per Component   : ------------  Demand Per Component  : --------
   Total Component Hours: ------------   Total Component Demand:      215

   Probability/Rate    :  4.650E-003     Type         : MEAN
   Variance            : ------E----     Units        : F/D
   Standard Deviation  : ------E----     Distribution : POISSON

                         ---Lower---    ---Upper---   -Confidence/Coverage-
   Confidence Bounds   :  2.900E-003     1.200E-002          90 %
   Tolerance Bounds    : ------E----    ------E----          -- %
         Error Factor  : ------E----       Sided             -- %
------------------------------------------------------------------------------
 Component            1: Unknown Internal Environment
 Applications         2:
                      3:
------------------------------------------------------------------------------
                 Origin                  Record Type
 Failure Data :   PLNT     PMLG-CRLB-SURV-LERS-DEVR-OTHR-    -    -    -
 Exposure Data:   PLNT     CRLB-SURV-   -    -    -    -    -    -    -

 Data Collection Period:  70 through 79 (YY through YY)

 Include Circuit? : U        Originating Facilities : BRP1-    -    -
 Nuclear Origin?  : Y        Failure Degree    :
 Bayesian Update? : N        Failure Severity  : C
 IRADAP Suitable? : Y        Include System?   : I  Systems : BY-  -  -  -
 Safety Grade?    : N
 Primary Failure? : U     Subsys. train :

-------------------------- REFERENCE INFORMATION ------------------------------
   Document Number : 20081       Detail Reference : III-11

--------------------------- ADDITIONAL COMMENTS ------------------------------
 FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP.
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```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Valves, Unknown Operator
         Design: Unknown
   Normal State: Normally Open
   Failure Mode: Spurious Close (Transfer Closed)        Data Record Number:   1

 ─────────────────────────NUCLARR-CALCULATED-RATES──────────────────────────
    Median:  2.119E-008  Upper Tolerance:  1.688E-007   Aggregation Type: 1
    Mean  : +0.000E+000  Error Factor   :  7.954E+000

 ─────────────────────REFERENCE-RAW-and-PROBABILITY-DATA─────────────────────
    Number of Failures    :      0         Number of Components   : ------
    Hours Per Component   : ------------   Demand Per Component   : --------
    Total Component Hours:      11100000   Total Component Demand: --------

    Probability/Rate   :  5.280E-008       Type          : MEAN
    Variance           :  2.820E-015       Units         : F/H
    Standard Deviation : ------E----       Distribution  : DISCRETE

                          ───Lower───     ───Upper───    -Confidence/Coverage-
    Confidence Bounds  : ------E----      ------E----               -- %
    Tolerance Bounds   : ------E----      ------E----               -- %
          Error Factor : ------E----         Sided                  -- %
 ────────────────────────────────────────────────────────────────────────────
   Component           1: Unknown Internal Environment
   Applications        2:
                       3:
 ────────────────────────────────────────────────────────────────────────────
                  Origin                       Record Type
   Failure Data :  PLNT      LERS-CRLB-PMLG-PMTR-DEVR-    -    -    -    -
   Exposure Data:  PLNT      MOPR-TSTR-   -    -    -    -    -    -    -

   Data Collection Period:  73 through 79 (YY through YY)

   Include Circuit? : U         Originating Facilities : ZIS1-ZIS2-    -
   Nuclear Origin?  : Y         Failure Degree    :
   Bayesian Update? : Y         Failure Severity  : C
   IRADAP Suitable? : Y         Include System?   : I  Systems : AL-  -  -  -
   Safety Grade?    : U
   Primary Failure? : U     Subsys. train :
 ─────────────────────────── REFERENCE INFORMATION ──────────────────────────
    Document Number : 21381        Detail Reference : 1.5-71
 ──────────────────────────── ADDITIONAL COMMENTS ───────────────────────────

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```
           MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Valves, Unknown Operator
        Design: Unknown
  Normal State: Unspecified
  Failure Mode: Spurious Close (Transfer Closed)       Data Record Number:   1

--------------------------NUCLARR-CALCULATED-RATES------------------------------
    Median:  1.058E-006   Upper Tolerance:  2.000E-006   Aggregation Type: 1
    Mean  :  1.014E-006   Error Factor   :  1.889E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
    Number of Failures   :        4       Number of Components   :     66
    Hours Per Component  :         59760  Demand Per Component   : --------
    Total Component Hours:       3944160  Total Component Demand: --------

    Probability/Rate    :  1.010E-006     Type          : MEAN
    Variance            : ------E----     Units         : F/H
    Standard Deviation  : ------E----     Distribution  : GAMMA

                         ---Lower---     ---Upper---     -Confidence/Coverage-
    Confidence Bounds   :  2.700E-008      2.000E-006             90 %
    Tolerance Bounds    : ------E----     ------E----             -- %
          Error Factor  : ------E----        Sided                -- %

--------------------------------------------------------------------------------
  Component           1: Unknown Internal Environment
  Applications        2:
                      3:
--------------------------------------------------------------------------------
                   Origin                       Record Type
  Failure Data :    PLNT      PMLG-CRLB-SURV-LERS-DEVR-OTHR-    -    -    -
  Exposure Data:    PLNT      CRLB-SURV-   -    -    -    -    -    -    -

  Data Collection Period:  70 through 79 (YY through YY)

  Include Circuit? : U        Originating Facilities : BRP1-    -    -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : N        Failure Severity  : C
  IRADAP Suitable? : Y        Include System?  : I   Systems : ZZ-  -  -  -
  Safety Grade?    : U
  Primary Failure? : U    Subsys. train :

---------------------------- REFERENCE INFORMATION -----------------------------
    Document Number : 20081        Detail Reference : III-11

----------------------------- ADDITIONAL COMMENTS ------------------------------
  FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP.

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```
              MECHANICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Valves, Unknown Operator
        Design: Unknown
  Normal State: Unspecified
  Failure Mode: Spurious Open (Transfer Open)          Data Record Number:   1

──────────────────────────NUCLARR─CALCULATED─RATES────────────────────────────
    Median:  8.055E-007  Upper Tolerance:  1.600E-006   Aggregation Type: 1
    Mean  :  7.606E-007  Error Factor   :  1.986E+000

─────────────────────REFERENCE─RAW─and─PROBABILITY─DATA───────────────────────
    Number of Failures    :       3       Number of Components  :     66
    Hours Per Component   :       59760   Demand Per Component  : --------
    Total Component Hours:      3944160   Total Component Demand: --------

    Probability/Rate    :  7.600E-007     Type         : MEAN
    Variance            : ------E----     Units        : F/H
    Standard Deviation  : ------E----     Distribution : GAMMA

                           ───Lower───     ───Upper───    -Confidence/Coverage-
    Confidence Bounds   :  1.000E-007      1.600E-006             90 %
    Tolerance Bounds    : ------E----     ------E----             -- %
          Error Factor  : ------E----        Sided                -- %

──────────────────────────────────────────────────────────────────────────────
  Component           1: Unknown Internal Environment
  Applications        2:
                      3:
──────────────────────────────────────────────────────────────────────────────
                 Origin                        Record Type
  Failure Data :  PLNT      PMLG-CRLB-SURV-LERS-DEVR-OTHR-     -    -    -
  Exposure Data:  PLNT      CRLB-SURV-   -    -    -    -    -    -    -

  Data Collection Period:  70 through 79 (YY through YY)

  Include Circuit? : U          Originating Facilities : BRP1-    -    -
  Nuclear Origin?  : Y          Failure Degree   :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : ZZ-  -  -  -
  Safety Grade?    : U
  Primary Failure? : U     Subsys. train :

──────────────────────────── REFERENCE INFORMATION ───────────────────────────
     Document Number : 20081       Detail Reference : III-11

───────────────────────────── ADDITIONAL COMMENTS ────────────────────────────
  FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP.

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ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Automatic Transfer Switches
      Design: Unknown
Normal State: Normally Standby
Failure Mode: Fails to Transfer Electrically         Data Record Number:   1

------------------------NUCLARR-CALCULATED-RATES-------------------------
  Median:  1.570E-002  Upper Tolerance:  5.093E-002  Aggregation Type: 1
  Mean  :  1.333E-002  Error Factor   :  3.243E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------
  Number of Failures    :      1       Number of Components   : ------
  Hours Per Component   : ------------ Demand Per Component   : --------
  Total Component Hours: ------------  Total Component Demand:       75

  Probability/Rate    :  2.710E-006    Type          : MEAN
  Variance            :  6.910E-012    Units         : F/D
  Standard Deviation : ------E----     Distribution : DISCRETE

                      ----Lower----   ----Upper----   -Confidence/Coverage-
  Confidence Bounds  : ------E----     ------E----               -- %
  Tolerance Bounds   : ------E----     ------E----               -- %
        Error Factor : ------E----        Sided                  -- %

--------------------------------------------------------------------------
Component          1: Voltage level Unknown - DC
Applications       2:
                   3:
--------------------------------------------------------------------------
                Origin                    Record Type
Failure Data :   PLNT     LERS-CRLB-PMLG-PMTR-SOCR-   -    -    -    -
Exposure Data:   PLNT     TSTR-   -    -    -    -    -    -    -    -

Data Collection Period:  73 through 79 (YY through YY)

Include Circuit? : U          Originating Facilities : IPS2-    -    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : Y          Failure Severity : C
IRADAP Suitable? : Y          Include System?   : I  Systems : EI-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y     Subsys. train :

------------------------- REFERENCE INFORMATION -------------------------
  Document Number : 20982      Detail Reference : 1.5-63

------------------------- ADDITIONAL COMMENTS ---------------------------


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```
            ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Batteries
        Design: Wet Cell (e.g., lead-acid)
  Normal State: Normally Standby
  Failure Mode: Fails to Operate                     Data Record Number:   1

----------------------NUCLARR-CALCULATED-RATES------------------------------
    Median:  2.440E-006   Upper Tolerance:  1.943E-005   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  7.964E+000

--------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures    :      0        Number of Components   : ------
    Hours Per Component   : ------------  Demand Per Component   : --------
    Total Component Hours:         96426  Total Component Demand: --------

    Probability/Rate    :  2.300E-008     Type          : MEDIAN
    Variance            :  5.800E-014     Units         : F/H
    Standard Deviation : ------E----      Distribution : DISCRETE

                         ----Lower----   ----Upper----  -Confidence/Coverage-
    Confidence Bounds  : ------E----     ------E----              -- %
    Tolerance Bounds   :  8.400E-010      2.500E-007              90 %
          Error Factor : ------E----        Sided                 -- %

----------------------------------------------------------------------------
  Component          1: Voltage level Unknown - DC
  Applications       2:
                     3:
----------------------------------------------------------------------------
                Origin                            Record Type
  Failure Data :  PLNT      PMWR-LERS-INCD-    -    -    -    -    -    -
  Exposure Data:  PLNT      TSTR-PMTR-CRLB-    -    -    -    -    -    -

  Data Collection Period:  75 through 80 (YY through YY)

  Include Circuit? : U          Originating Facilities : NEE3-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : EI-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : U    Subsys. train :
---------------------------- REFERENCE INFORMATION -------------------------
     Document Number : 21281      Detail Reference : 5-22
----------------------------- ADDITIONAL COMMENTS --------------------------
  MEAN = 8.20E-08/H

----------------------------------------------------------------------------
```

```
         ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Batteries
        Design: Wet Cell (e.g., lead-acid)
  Normal State: Normally Standby
  Failure Mode: Fails to Operate                    Data Record Number:   2

------------------------NUCLARR-CALCULATED-RATES------------------------------
    Median:  1.165E-006   Upper Tolerance:  9.275E-006   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  7.964E+000

------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------------
    Number of Failures   :      0        Number of Components  : ------
    Hours Per Component  : ------------  Demand Per Component  : --------
    Total Component Hours:       202000  Total Component Demand: --------

    Probability/Rate    :  7.610E-008    Type         : MEAN
    Variance            :  4.270E-014    Units        : F/H
    Standard Deviation : ------E----     Distribution : DISCRETE

                         ----Lower----   ----Upper----  -Confidence/Coverage-
    Confidence Bounds  : ------E----     ------E----            -- %
    Tolerance Bounds   : ------E----     ------E----            -- %
          Error Factor : ------E----        Sided               -- %

------------------------------------------------------------------------------
  Component         1: Voltage level Unknown - DC
  Applications      2:
                    3:
------------------------------------------------------------------------------
                 Origin                    Record Type
  Failure Data :  PLNT      LERS-CRLB-PMLG-PMTR-DEVR-   -   -   -   -
  Exposure Data:  PLNT      MOPR-TSTR-   -   -   -   -   -   -   -   -

  Data Collection Period:  73 through 79 (YY through YY)

  Include Circuit? : U        Originating Facilities : ZIS1-ZIS2-    -
  Nuclear Origin?  : Y        Failure Degree   :
  Bayesian Update? : Y        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I  Systems : EI-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : U    Subsys. train :

------------------------- REFERENCE INFORMATION ------------------------------
    Document Number : 21381       Detail Reference : 1.5-75

------------------------- ADDITIONAL COMMENTS --------------------------------

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```
          ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Batteries
         Design: Wet Cell (e.g., lead-acid)
   Normal State: Normally Standby
   Failure Mode: Fails to Operate                          Data Record Number:   3

 ---------------------------NUCLARR-CALCULATED-RATES--------------------------------
    Median:  1.243E-005   Upper Tolerance:  4.058E-005   Aggregation Type: 1
    Mean  :  1.044E-005   Error Factor   :  3.265E+000

 ----------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------------
    Number of Failures    :       1        Number of Components  : ------
    Hours Per Component   : ------------   Demand Per Component  : --------
    Total Component Hours:          95800  Total Component Demand: --------

    Probability/Rate    :  1.550E-005      Type         : MEAN
    Variance            :  2.200E-010      Units        : F/H
    Standard Deviation  : ------E----      Distribution : DISCRETE

                          ---Lower---      ---Upper---    -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----              -- %
    Tolerance Bounds    : ------E----      ------E----              -- %
          Error Factor  : ------E----         Sided                 -- %

 -----------------------------------------------------------------------------------
   Component           1: Voltage level Unknown - DC
   Applications        2:
                       3:
 -----------------------------------------------------------------------------------
                     Origin                        Record Type
   Failure Data :    PLNT       LERS-CRLB-PMLG-PMTR-SOCR-   -    -    -    -
   Exposure Data:    PLNT       MOPR-TSTR-   -    -    -    -    -    -    -

   Data Collection Period:  73 through 79 (YY through YY)

   Include Circuit? : U         Originating Facilities : IPS2-    -    -
   Nuclear Origin?  : Y         Failure Degree     :
   Bayesian Update? : Y         Failure Severity : C
   IRADAP Suitable? : Y         Include System?  : I   Systems : EI-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : Y     Subsys. train :

 ----------------------------- REFERENCE INFORMATION -------------------------------
     Document Number : 20982       Detail Reference : 1.5-63

 ----------------------------- ADDITIONAL COMMENTS ---------------------------------


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```
            ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Batteries
         Design: Wet Cell (e.g., lead-acid)
   Normal State: Normally Standby
   Failure Mode: Fails to Operate                       Data Record Number:   4

 ---------------------------NUCLARR-CALCULATED-RATES-----------------------------
    Median:  1.245E-005   Upper Tolerance:  3.152E-005   Aggregation Type: 1
    Mean  :  1.142E-005   Error Factor   :  2.532E+000

 ------------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures    :       2         Number of Components   : ------
    Hours Per Component   : ------------    Demand Per Component   : --------
    Total Component Hours:        175200    Total Component Demand: --------

    Probability/Rate    :  5.820E-006       Type          : MEAN
    Variance            :  8.950E-012       Units         : F/H
    Standard Deviation : ------E----        Distribution : GAMMA

                          ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----                -- %
    Tolerance Bounds    : ------E----      ------E----                -- %
          Error Factor : ------E----          Sided                   -- %

 --------------------------------------------------------------------------------
  Component          1: Voltage level Unknown - DC
  Applications       2:
                     3:
 --------------------------------------------------------------------------------
                 Origin                      Record Type
  Failure Data :  PLNT     UTDB-LERS-INCD-MOPR-    -    -    -    -    -
  Exposure Data:  PLNT     SSLB-SURV-JOBO-    -    -    -    -    -    -

  Data Collection Period:  74 through 83 (YY through YY)

  Include Circuit? : U         Originating Facilities : HNP1-    -    -
  Nuclear Origin?  : Y         Failure Degree    :
  Bayesian Update? : Y         Failure Severity : C
  IRADAP Suitable? : Y         Include System?   : I  Systems : EI-   -   -   -
  Safety Grade?    : Y
  Primary Failure? : U    Subsys. train :

 ------------------------------ REFERENCE INFORMATION ---------------------------
     Document Number : 20585        Detail Reference : 4.1-5,11

 ------------------------------ ADDITIONAL COMMENTS -----------------------------


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```
            ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/02/03

     Component: Batteries
        Design: Wet Cell (e.g., lead-acid)
  Normal State: Normally Standby
  Failure Mode: Fails to Operate                       Data Record Number:   5

 ------------------------------NUCLARR-CALCULATED-RATES-----------------------------
    Median:  4.000E-008   Upper Tolerance:  8.367E-008   Aggregation Type: 5
    Mean  :  4.423E-008   Error Factor   :  2.092E+000

 ---------------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures   : ------            Number of Components  : ------
    Hours Per Component  : ------------      Demand Per Component  : --------
    Total Component Hours: ------------      Total Component Demand: --------

    Probability/Rate    :  4.000E-008         Type         : MEDIAN
    Variance            : ------E----         Units        : F/H
    Standard Deviation  : ------E----         Distribution : OTHER

                          ---Lower---      ---Upper---    -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----               -- %
    Tolerance Bounds    : +0.000E+000       1.600E-007               80 %
          Error Factor  : ------E----         Sided                  -- %

 ------------------------------------------------------------------------------------
  Component          1: Voltage level Unknown - DC
  Applications       2:
                     3:
 ------------------------------------------------------------------------------------
                 Origin                          Record Type
  Failure Data :  OTHR            -    -    -    -    -    -    -    -    -
  Exposure Data:                  -    -    -    -    -    -    -    -    -

  Data Collection Period:      through 82 (YY through YY)

  Include Circuit? :             Originating Facilities :     -    -    -
  Nuclear Origin?  : N           Failure Degree    : OL
  Bayesian Update? : N           Failure Severity  : C
  IRADAP Suitable? : U           Include System?   :     Systems :   -   -   -   -
  Safety Grade?    :
  Primary Failure? :        Subsys. train :

 -------------------------------- REFERENCE INFORMATION ----------------------------
     Document Number :  5383        Detail Reference : 84

 -------------------------------- ADDITIONAL COMMENTS ------------------------------
  OTHR - SEE SUP.REF.  ALSO, SUP.REF."PWR10".  Lead acid battery in
  stationary float service; NO OUTPUT DURING TEST.
 ------------------------------------------------------------------------------------
```

```
         ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Charger, Battery
         Design: Charger, Battery
   Normal State: Normally Energized
   Failure Mode: Fails to Operate                   Data Record Number:   1

-----------------------------NUCLARR-CALCULATED-RATES---------------------------
     Median:  1.235E-005   Upper Tolerance:  4.032E-005   Aggregation Type: 1
     Mean  :  1.037E-005   Error Factor   :  3.265E+000

--------------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
     Number of Failures      :       1          Number of Components  : ------
     Hours Per Component     : ------------     Demand Per Component  : --------
     Total Component Hours:          96426      Total Component Demand: --------

     Probability/Rate    :  2.100E-006          Type          : MEDIAN
     Variance            :  3.100E-011          Units         : F/H
     Standard Deviation  : ------E----          Distribution  : DISCRETE

                           ---Lower---     ---Upper---    -Confidence/Coverage-
     Confidence Bounds   : ------E----     ------E----              -- %
     Tolerance Bounds    :  3.000E-007      1.300E-005              90 %
           Error Factor  : ------E----        Sided                 -- %

--------------------------------------------------------------------------------
   Component           1: Voltage level Unknown (Unknown VAC/VDC)
   Applications        2:
                       3:
--------------------------------------------------------------------------------
                  Origin                        Record Type
   Failure Data :  PLNT      PMWR-LERS-INCD-    -    -    -    -    -    -
   Exposure Data:  PLNT      TSTR-PMTR-CRLB-    -    -    -    -    -    -

   Data Collection Period:  75 through 80 (YY through YY)

   Include Circuit? : U         Originating Facilities : NEE3-    -    -
   Nuclear Origin?  : Y         Failure Degree    :
   Bayesian Update? : Y         Failure Severity  : C
   IRADAP Suitable? : Y         Include System?   : I  Systems : EI-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : U     Subsys. train :

--------------------------- REFERENCE INFORMATION ------------------------------
     Document Number : 21281         Detail Reference : 5-22
---------------------------- ADDITIONAL COMMENTS -------------------------------
   MEAN = 5.00E-06/H

--------------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Charger, Battery
        Design: Charger, Battery
  Normal State: Normally Energized
  Failure Mode: Fails to Operate                     Data Record Number:   2

--------------------------NUCLARR-CALCULATED-RATES---------------------------
   Median:  1.165E-006   Upper Tolerance:  9.275E-006   Aggregation Type: 1
   Mean   : +0.000E+000  Error Factor    :  7.964E+000

------------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------
   Number of Failures    :       0 -       Number of Components   : ------
   Hours Per Component   : ------------    Demand Per Component   : --------
   Total Component Hours:        202000    Total Component Demand: --------

   Probability/Rate    :  5.540E-007       Type          : MEAN
   Variance            :  6.940E-012       Units         : F/H
   Standard Deviation : ------E----        Distribution : DISCRETE

                        ---Lower---      ---Upper---    -Confidence/Coverage-
   Confidence Bounds  : ------E----      ------E----              -- %
   Tolerance Bounds   : ------E----      ------E----              -- %
        Error Factor : ------E----         Sided                  -- %
-----------------------------------------------------------------------------
  Component         1: Voltage level Unknown (Unknown VAC/VDC)
  Applications      2:
                    3:
-----------------------------------------------------------------------------
                Origin                       Record Type
  Failure Data :  PLNT      LERS-CRLB-PMLG-PMTR-DEVR-    -    -    -    -
  Exposure Data:  PLNT      MOPR-TSTR-    -    -    -    -    -    -    -

  Data Collection Period:  73 through 79 (YY through YY)

  Include Circuit? : U        Originating Facilities : ZIS1-ZIS2-    -
  Nuclear Origin?  : Y        Failure Degree   :
  Bayesian Update? : Y        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I  Systems : EI-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : U    Subsys. train :

------------------------- REFERENCE INFORMATION -----------------------------
   Document Number : 21381        Detail Reference : 1.5-75
-------------------------- ADDITIONAL COMMENTS ------------------------------


-----------------------------------------------------------------------------
```

```
         ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

    Component: Charger, Battery
       Design: Charger, Battery
 Normal State: Normally Energized
 Failure Mode: Fails to Operate                       Data Record Number:   3

─────────────────────────NUCLARR-CALCULATED-RATES──────────────────────────
   Median:  2.456E-006  Upper Tolerance:  1.956E-005  Aggregation Type: 1
   Mean  : +0.000E+000  Error Factor    :  7.964E+000

───────────────────────REFERENCE-RAW and PROBABILITY-DATA──────────────────
   Number of Failures   :      0         Number of Components  : ------
   Hours Per Component  : ------------   Demand Per Component  : --------
   Total Component Hours:        95800   Total Component Demand: --------

   Probability/Rate   :  2.010E-006      Type         : MEAN
   Variance           :  2.300E-011      Units        : F/H
   Standard Deviation : ------E----      Distribution : DISCRETE

                        ───Lower───   ───Upper───   -Confidence/Coverage-
   Confidence Bounds  : ------E----   ------E----               -- %
   Tolerance Bounds   : ------E----   ------E----               -- %
        Error Factor  : ------E----      Sided                  -- %

───────────────────────────────────────────────────────────────────────────
 Component          1: Voltage level Unknown - DC
 Applications       2:
                    3:
───────────────────────────────────────────────────────────────────────────
               Origin                      Record Type
 Failure Data :  PLNT     LERS-CRLB-PMLG-PMTR-SOCR-   -    -    -    -
 Exposure Data:  PLNT     MOPR-TSTR-   -    -    -    -    -    -    -

 Data Collection Period:  73 through 79 (YY through YY)

 Include Circuit? : U          Originating Facilities : IPS2-    -    -
 Nuclear Origin?  : Y          Failure Degree    :
 Bayesian Update? : Y          Failure Severity  : C
 IRADAP Suitable? : Y          Include System?   : I  Systems : EI-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y     Subsys. train :
──────────────────────────── REFERENCE INFORMATION ─────────────────────────
  Document Number : 20982        Detail Reference : 1.5-63
──────────────────────────── ADDITIONAL COMMENTS ───────────────────────────


───────────────────────────────────────────────────────────────────────────
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

```
   Component: Charger, Battery
      Design: Charger, Battery
Normal State: Normally Energized
Failure Mode: Fails to Operate                        Data Record Number:   4

-------------------------NUCLARR-CALCULATED-RATES--------------------------
  Median:  2.254E-005   Upper Tolerance:  4.290E-005   Aggregation Type: 1
  Mean  :  2.179E-005   Error Factor   :  1.903E+000

--------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
  Number of Failures    :      5          Number of Components  : ------
  Hours Per Component   : ------------    Demand Per Component  : --------
  Total Component Hours:        229488    Total Component Demand: --------

  Probability/Rate   :  1.020E-005        Type         : MEAN
  Variance           :  1.880E-011        Units        : F/H
  Standard Deviation : ------E----        Distribution : GAMMA

                      ---Lower---     ---Upper---    -Confidence/Coverage-
  Confidence Bounds  : ------E----     4.290E-005            95 %
  Tolerance Bounds   : ------E----    ------E----            -- %
        Error Factor : ------E----        Sided              -- %

---------------------------------------------------------------------------
Component          1: Voltage level Unknown - DC
Applications       2:
                   3:
---------------------------------------------------------------------------
                 Origin                      Record Type
Failure Data :   PLNT      UTDB-LERS-PMLG-SSLB-    -    -    -    -    -
Exposure Data:   PLNT      DCCN-PMTR-RHLG-    -    -    -    -    -    -

Data Collection Period:  71 through 84 (YY through YY)

Include Circuit? : U         Originating Facilities : MNS1-    -    -
Nuclear Origin?  : Y         Failure Degree    :
Bayesian Update? : Y         Failure Severity : C
IRADAP Suitable? : Y         Include System?  : I  Systems : EI-  -  -  -
Safety Grade?    : Y
Primary Failure? : U     Subsys. train :
----------------------------- REFERENCE INFORMATION -----------------------
  Document Number : 21185       Detail Reference : 3.1-7,13
------------------------------ ADDITIONAL COMMENTS ------------------------

---------------------------------------------------------------------------
```

```
               ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Charger, Battery
        Design: Charger, Battery
  Normal State: Normally Energized
  Failure Mode: Fails to Operate                          Data Record Number:   5

------------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  3.523E-005  Upper Tolerance:  6.378E-005  Aggregation Type: 1
    Mean  :  3.425E-005  Error Factor    :  1.811E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures   :      6        Number of Components  : ------
    Hours Per Component  : ------------  Demand Per Component  : --------
    Total Component Hours:      175200   Total Component Demand: --------

    Probability/Rate    :  1.280E-005    Type         : MEAN
    Variance            :  2.490E-011    Units        : F/H
    Standard Deviation : ------E----     Distribution : GAMMA

                         ----Lower----   ----Upper----  -Confidence/Coverage-
    Confidence Bounds  : ------E----     ------E----              -- %
    Tolerance Bounds   : ------E----     ------E----              -- %
          Error Factor : ------E----        Sided                 -- %

---------------------------------------------------------------------------------
  Component          1: Voltage level Unknown (Unknown VAC/VDC)
  Applications       2:
                     3:
---------------------------------------------------------------------------------
                  Origin                    Record Type
  Failure Data :   PLNT      UTDB-LERS-INCD-MOPR-    -    -    -    -    -
  Exposure Data:   PLNT      SSLB-SURV-JOBO-    -    -    -    -    -    -

  Data Collection Period:  74 through 83 (YY through YY)

  Include Circuit? : U          Originating Facilities : HNP1-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?   : I  Systems : EI-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : U      Subsys. train :

--------------------------- REFERENCE INFORMATION --------------------------------
    Document Number : 20585      Detail Reference : 4.1-5,11

--------------------------- ADDITIONAL COMMENTS ---------------------------------


---------------------------------------------------------------------------------
```

```
           ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/02/03

     Component: Charger, Battery
        Design: Charger, Battery
  Normal State: Normally Energized
  Failure Mode: Fails to Operate                        Data Record Number:   6

-------------------------NUCLARR-CALCULATED-RATES-------------------------------
    Median:  6.200E-007  Upper Tolerance:  3.028E-006  Aggregation Type: 5
    Mean  :  9.869E-007  Error Factor   :  4.884E+000

---------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
    Number of Failures   : ------          Number of Components  : ------
    Hours Per Component  : ------------    Demand Per Component  : --------
    Total Component Hours: ------------    Total Component Demand: --------

    Probability/Rate   :  6.200E-007       Type         : MEDIAN
    Variance           : ------E----       Units        : F/H
    Standard Deviation : ------E----       Distribution : OTHER

                        ---Lower---    ---Upper---   -Confidence/Coverage-
    Confidence Bounds  : ------E----   ------E----              -- %
    Tolerance Bounds   : +0.000E+000    1.220E-005              80 %
          Error Factor : ------E----      Sided                 -- %

--------------------------------------------------------------------------------
  Component          1: Voltage level Unknown - AC
  Applications       2:
                     3:
--------------------------------------------------------------------------------
                Origin                        Record Type
  Failure Data :  OTHR         -    -    -    -    -    -    -    -    -
  Exposure Data:               -    -    -    -    -    -    -    -    -

  Data Collection Period:      through 80 (YY through YY)

  Include Circuit? :          Originating Facilities :    -    -    -
  Nuclear Origin?  : N        Failure Degree    :
  Bayesian Update? : N        Failure Severity : C
  IRADAP Suitable? : U        Include System?  :    Systems :    -  -  -  -
  Safety Grade?    :
  Primary Failure? : N     Subsys. train :

----------------------------- REFERENCE INFORMATION ----------------------------
    Document Number :  5383       Detail Reference : 61

------------------------------ ADDITIONAL COMMENTS -----------------------------
  OTHR - See sup. ref.

--------------------------------------------------------------------------------
```

```
                ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Circuit Breakers, Power
         Design: Unknown
   Normal State: Normally Open
   Failure Mode: Fails to Close                          Data Record Number:   1

-------------------------------NUCLARR-CALCULATED-RATES-----------------------------
    Median:  1.825E-003   Upper Tolerance:  4.647E-003   Aggregation Type: 1
    Mean  :  1.678E-003   Error Factor   :  2.546E+000

---------------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------------
    Number of Failures   :      2         Number of Components  : ------
    Hours Per Component  : ------------   Demand Per Component  : --------
    Total Component Hours: ------------   Total Component Demand:     1192

    Probability/Rate    :  4.700E-004     Type          : MEDIAN
    Variance            :  6.900E-007     Units         : F/D
    Standard Deviation  : ------E----     Distribution  : DISCRETE

                          ---Lower---     ---Upper---    -Confidence/Coverage-
    Confidence Bounds   : ------E----     ------E----             -- %
    Tolerance Bounds    :  5.400E-005      1.600E-003             90 %
          Error Factor  : ------E----         Sided               -- %

-------------------------------------------------------------------------------------
   Component             1: 600 VAC - 4.74 kVAC (single voltage)
   Applications          2:
                         3:
-------------------------------------------------------------------------------------
                  Origin                         Record Type
   Failure Data :  PLNT        PWMR-LERS-INCD-   -   -   -   -   -   -
   Exposure Data:  PLNT        TSTR-PMTR-CRLB-   -   -   -   -   -   -

   Data Collection Period:  75 through 80 (YY through YY)

   Include Circuit? : U        Originating Facilities : NEE3-   -   -
   Nuclear Origin?  : Y        Failure Degree    :
   Bayesian Update? : Y        Failure Severity  : C
   IRADAP Suitable? : Y        Include System?   : I   Systems : EA-  -  -  -
   Safety Grade?    : N
   Primary Failure? : U    Subsys. train :

------------------------------- REFERENCE INFORMATION ------------------------------
     Document Number : 21281        Detail Reference : 5-23
-------------------------------- ADDITIONAL COMMENTS -------------------------------
   MEAN = 8.90E-04/D

-------------------------------------------------------------------------------------
```

323

```
       ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Circuit Breakers, Power
      Design: Unknown
Normal State: Normally Open
Failure Mode: Fails to Close                           Data Record Number:   2

----------------------------NUCLARR-CALCULATED-RATES----------------------------
  Median:  1.658E-003   Upper Tolerance:  3.165E-003   Aggregation Type: 1
  Mean  :  1.603E-003   Error Factor   :  1.909E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
  Number of Failures     :      5          Number of Components   : ------
  Hours Per Component    : ------------    Demand Per Component   : --------
  Total Component Hours: ------------      Total Component Demand:     3120

  Probability/Rate    :  1.260E-003        Type         : MEAN
  Variance            :  2.870E-007        Units        : F/D
  Standard Deviation : ------E ---         Distribution : DISCRETE

                      ----Lower----    ----Upper----   -Confidence/Coverage-
  Confidence Bounds  : ------E----      ------E----              -- %
  Tolerance Bounds   : ------E----      ------E----              -- %
        Error Factor : ------E----         Sided                 -- %

--------------------------------------------------------------------------------
Component          1: Voltage level Unknown - AC
Applications       2:
                   3:
--------------------------------------------------------------------------------
                 Origin                    Record Type
Failure Data :   PLNT       LERS-CRLB-PMLG-PMTR-DEVR-    -    -    -    -
Exposure Data:   PLNT       TSTR-    -    -    -    -    -    -    -    -

Data Collection Period:  73 through 79 (YY through YY)

Include Circuit? : U          Originating Facilities : ZIS1-ZIS2-    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : Y          Failure Severity : C
IRADAP Suitable? : Y          Include System?   : I  Systems : EA-EC-  -  -
Safety Grade?    : N
Primary Failure? : U     Subsys. train :

------------------------------ REFERENCE INFORMATION ----------------------------
  Document Number : 21381        Detail Reference : 1.5-75
------------------------------ ADDITIONAL COMMENTS ------------------------------

--------------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Circuit Breakers, Power
        Design: Unknown
  Normal State: Normally Open
  Failure Mode: Fails to Close                       Data Record Number:   3

-------------------------NUCLARR-CALCULATED-RATES-------------------------
    Median:  5.184E-003   Upper Tolerance:  6.462E-003   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  1.247E+000

---------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
    Number of Failures    :      0        Number of Components   : ------
    Hours Per Component   : ------------  Demand Per Component   : --------
    Total Component Hours: ------------   Total Component Demand:      296

    Probability/Rate    :  2.460E-005     Type          : MEAN
    Variance            :  1.840E-008     Units         : F/D
    Standard Deviation : ------E----      Distribution : DISCRETE

                          ----Lower----   ----Upper----  -Confidence/Coverage-
    Confidence Bounds   : ------E----     ------E----                -- %
    Tolerance Bounds    : ------E----     ------E----                -- %
          Error Factor : ------E----        Sideo                    -- %
--------------------------------------------------------------------------
  Component          1: Voltage level Unknown - AC
  Applications       2:
                     3:
--------------------------------------------------------------------------
                  Origin                     Record Type
  Failure Data :  PLNT      LERS-CRLB-PMLG-PMTR-SOCR-   -    -    -    -
  Exposure Data:  PLNT      TSTR-   -    -    -    -    -    -    -    -

  Data Collection Period:  73 through 79 (YY through YY)

  Include Circuit? : U          Originating Facilities : IPS2-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : EX-  -  -  -
  Safety Grade?    : U
  Primary Failure? : Y     Subsys. train :

------------------------- REFERENCE INFORMATION ---------------------------
     Document Number : 20982        Detail Reference : 1.5-62
-------------------------- ADDITIONAL COMMENTS ----------------------------

--------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Circuit Breakers, Power
      Design: Unknown
Normal State: Normally Closed
Failure Mode: Fails to Operate                    Data Record Number:   1

-----------------------NUCLARR-CALCULATED-RATES--------------------------
  Median:  9.247E-005  Upper Tolerance:  2.050E-004   Aggregation Type: 1
  Mean  :  8.738E-005  Error Factor   :  2.217E+000

-------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
  Number of Failures   :      3         Number of Components  : ------
  Hours Per Component  : ------------   Demand Per Component  : --------
  Total Component Hours: ------------   Total Component Demand:    34333

  Probability/Rate   :  1.340E-004      Type        : MEAN
  Variance           :  3.740E-009      Units       : F/D
  Standard Deviation : ------E----      Distribution : BETA

                     ---Lower---   ---Upper---   -Confidence/Coverage-
  Confidence Bounds  : ------E----     2.050E-004           95 %
  Tolerance Bounds   : ------E----    ------E----           -- %
        Error Factor : ------E----       Sided              -- %

-------------------------------------------------------------------------
Component         1: 600 VAC - 4.74 kVAC (single voltage)
Applications      2:
                  3:
-------------------------------------------------------------------------
               Origin                    Record Type
Failure Data :  PLNT      UTDB-LERS-PMLG-SSLB-   -   -   -   -   -
Exposure Data:  PLNT      DCCN-PMTR-RHLG-    -   -   -   -   -   -

Data Collection Period:  71 through 84 (YY through YY)

Include Circuit? : U        Originating Facilities : MNS1-    -    -
Nuclear Origin?  : Y        Failure Degree    :
Bayesian Update? : Y        Failure Severity : C
IRADAP Suitable? : Y        Include System?  : I  Systems : EA-  -  -  -
Safety Grade?    : N
Primary Failure? : U    Subsys. train :

---------------------------- REFERENCE INFORMATION ----------------------
  Document Number : 21185       Detail Reference : 3.1-6,13
----------------------------- ADDITIONAL COMMENTS -----------------------


-------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Circuit Breakers, Power
        Design: Unknown
  Normal State: Normally Closed
  Failure Mode: Fails to Operate                    Data Record Number:   2

  ----------------------------NUCLARR-CALCULATED-RATES-----------------------------
    Median:  5.494E-004  Upper Tolerance:  9.950E-004  Aggregation Type: 1
    Mean  :  5.339E-004  Error Factor   :  1.811E+000

  -----------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------------
    Number of Failures    :      6          Number of Components   : ------
    Hours Per Component   : ------------    Demand Per Component   : --------
    Total Component Hours: ------------    Total Component Demand:     11238

    Probability/Rate    :  6.140E-004       Type          : MEAN
    Variance            :  4.850E-008       Units         : F/D
    Standard Deviation : ------E----        Distribution : BETA

                          ---Lower---    ---Upper---   -Confidence/Coverage-
    Confidence Bounds   : ------E----    9.950E-004            95 %
    Tolerance Bounds    : ------E----    ------E----           -- %
          Error Factor : ------E----       Sided               -- %

  ---------------------------------------------------------------------------------
  Component              1: 250 - 599 VAC (single voltage)
  Applications           2:
                         3:
  ---------------------------------------------------------------------------------
                    Origin                       Record Type
  Failure Data :    PLNT     UTDB-LERS-PMLG-SSLB-   -   -   -   -   -
  Exposure Data:    PLNT     DCCN-PMTR-RHLG-   -   -   -   -   -   -

  Data Collection Period:  71 through 84 (YY through YY)

  Include Circuit? : U          Originating Facilities : MNS1-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?   : I   Systems : EC-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U       Subsys. train :

  ------------------------------ REFERENCE INFORMATION ----------------------------
     Document Number : 21185       Detail Reference : 3.1-6,13

  ------------------------------- ADDITIONAL COMMENTS -----------------------------

  ---------------------------------------------------------------------------------
```

```
           ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Circuit Breakers, Power
         Design: Unknown
   Normal State: Normally Closed
   Failure Mode: Fails to Open                          Data Record Number:   1

 ----------------------------NUCLARR-CALCULATED-RATES---------------------------
     Median:  1.294E-003   Upper Tolerance:  1.613E-003   Aggregation Type: 1
     Mean   : +0.000E+000  Error Factor   :  1.246E+000

 -----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
     Number of Failures   :      0          Number of Components  : ------
     Hours Per Component  : ------------    Demand Per Component  : --------
     Total Component Hours: ------------    Total Component Demand:     1192

     Probability/Rate    :  1.100E-004      Type         : MEDIAN
     Variance            :  1.100E-007      Units        : F/D
     Standard Deviation  : ------E----      Distribution : DISCRETE

                           ---Lower---     ---Upper---    -Confidence/Coverage-
     Confidence Bounds   : ------E----     ------E----              -- %
     Tolerance Bounds    :  1.500E-005      6.700E-004              90 %
           Error Factor  : ------E----        Sided                 -- %

 -------------------------------------------------------------------------------
   Component           1: 600 VAC - 4.74 kVAC (single voltage)
   Applications        2:
                       3:
 -------------------------------------------------------------------------------
                   Origin                           Record Type
   Failure Data :   PLNT        PMWR-LERS-INCD-    -    -    -    -    -    -
   Exposure Data:   PLNT        TSTR-PMTR-CRLB-    -    -    -    -    -    -

   Data Collection Period:  75 through 80 (YY through YY)

   Include Circuit? : U         Originating Facilities : NEE3-    -    -
   Nuclear Origin?  : Y         Failure Degree    :
   Bayesian Update? : Y         Failure Severity : C
   IRADAP Suitable? : Y         Include System?  : I  Systems : EA-  -  -  -
   Safety Grade?    : N
   Primary Failure? : U    Subsys. train :
 ---------------------------- REFERENCE INFORMATION ----------------------------
     Document Number : 21281        Detail Reference : 5-23
 ----------------------------- ADDITIONAL COMMENTS -----------------------------
   MEAN = 8.90E-04/D

 -------------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

```
  Component: Circuit Breakers, Power
     Design: Unknown
Normal State: Normally Closed
Failure Mode: Fails to Open                          Data Record Number:   2

---------------------------NUCLARR-CALCULATED-RATES--------------------------
   Median:  3.794E-004  Upper Tolerance:  1.255E-003   Aggregation Type: 1
   Mean  :  3.205E-004  Error Factor   :  3.308E+000

---------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
   Number of Failures    :       1        Number of Components   : ------
   Hours Per Component   : ------------   Demand Per Component   : --------
   Total Component Hours: ------------    Total Component Demand:     3120

   Probability/Rate    :  5.310E-004      Type          : MEAN
   Variance            :  9.730E-008      Units         : F/D
   Standard Deviation : ------E----       Distribution : DISCRETE

                         ----Lower----   ----Upper----   -Confidence/Coverage-
   Confidence Bounds  : ------E----     ------E----               -- %
   Tolerance Bounds   : ------E----     ------E----               -- %
         Error Factor : ------E----        Sided                  -- %
-----------------------------------------------------------------------------
Component           1: Voltage level Unknown - AC
Applications        2:
                    3:
-----------------------------------------------------------------------------
                 Origin                      Record Type
Failure Data :    PLNT      LERS-CRLB-PMLG-PMTR-DEVR-   -    -    -    -
Exposure Data:    PLNT      TSTR-   -    -    -    -    -    -    -    -

Data Collection Period:  73 through 79 (YY through YY)

Include Circuit? : U          Originating Facilities : ZIS1-ZIS2-    -
Nuclear Origin?  : Y          Failure Degree     :
Bayesian Update? : Y          Failure Severity : C
IRADAP Suitable? : Y          Include System?   : I  Systems : EA-EC-  -  -
Safety Grade?    : N
Primary Failure? : U     Subsys. train :

------------------------------ REFERENCE INFORMATION ------------------------
   Document Number : 21381        Detail Reference : 1.5-75
------------------------------- ADDITIONAL COMMENTS -------------------------


-----------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Circuit Breakers, Power
      Design: Unknown
Normal State: Normally Closed
Failure Mode: Fails to Open                          Data Record Number:   3

--------------------------NUCLARR CALCULATED RATES--------------------------
  Median:  8.445E-003   Upper Tolerance:  1.602E-002   Aggregation Type: 1
  Mean  :  8.170E-003   Error Factor   :  1.897E+000

----------------------REFERENCE RAW and PROBABILITY DATA--------------------
  Number of Failures    :       5       Number of Components  : ------
  Hours Per Component   : ------------  Demand Per Component  : --------
  Total Component Hours: ------------   Total Component Demand:      612

  Probability/Rate   :  9.790E-003      Type         : MEAN
  Variance           :  4.390E-005      Units        : F/D
  Standard Deviation : ------E----      Distribution : DISCRETE

                       ---Lower---      ---Upper---    -Confidence/Coverage-
  Confidence Bounds  : ------E----      ------E----             -- %
  Tolerance Bounds   : ------E----      ------E----             -- %
        Error Factor : ------E----         Sided                -- %

----------------------------------------------------------------------------
Component           1: Voltage level Unknown - AC
Applications        2:
                    3:
----------------------------------------------------------------------------
                 Origin                      Record Type
Failure Data :    PLNT      LERS-CRLB-PMLG-PMTR-DEVR-   -    -    -    -
Exposure Data:    PLNT      TSTR-   -    -    -    -    -    -    -    -

Data Collection Period:  73 through 79 (YY through YY)

Include Circuit? : U         Originating Facilities : ZIS1-ZIS2-    -
Nuclear Origin?  : Y         Failure Degree   :
Bayesian Update? : Y         Failure Severity : C
IRADAP Suitable? : Y         Include System?  : I  Systems : JC-  -  -  -
Safety Grade?    : N
Primary Failure? : U    Subsys. train :

--------------------------- REFERENCE INFORMATION --------------------------
  Document Number : 21381       Detail Reference : 1.5-77

---------------------------- ADDITIONAL COMMENTS ---------------------------


----------------------------------------------------------------------------
```

```
         ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Circuit Breakers, Power
      Design: Unknown
Normal State: Normally Closed
Failure Mode: Fails to Open                          Data Record Number:   4

-----------------------------NUCLARR-CALCULATED-RATES--------------------------
  Median:  5.184E-003   Upper Tolerance:  6.462E-003   Aggregation Type: 1
  Mean  : +0.000E+000   Error Factor   :  1.247E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
  Number of Failures   :      0           Number of Components  : ------
  Hours Per Component  : ------------     Demand Per Component  : --------
  Total Component Hours: ------------     Total Component Demand:      296

  Probability/Rate   :  6.360E-004        Type         : MEAN
  Variance           :  2.140E-006        Units        : F/D
  Standard Deviation : ------E----        Distribution : DISCRETE

                        ---Lower---     ---Upper---    -Confidence/Coverage-
  Confidence Bounds  : ------E----     ------E----                -- %
  Tolerance Bounds   : ------E----     ------E----                -- %
        Error Factor : ------E----        Sided                   -- %

-------------------------------------------------------------------------------
Component          1: Voltage level Unknown - AC
Applications       2:
                   3:
-------------------------------------------------------------------------------
               Origin                      Record Type
Failure Data :  PLNT      LERS-CRLB-PMLG-PMTR-SOCR-   -    -    -    -
Exposure Data:  PLNT      TSTR-   -    -    -    -    -    -    -    -

Data Collection Period:  73 through 79 (YY through YY)

Include Circuit? : U          Originating Facilities : IPS2-    -    -
Nuclear Origin?  : Y          Failure Degree     :
Bayesian Update? : Y          Failure Severity : C
IRADAP Suitable? : Y          Include System?  : I  Systems : EX-  -  -  -
Safety Grade?    : U
Primary Failure? : Y     Subsys. train :

------------------------------ REFERENCE INFORMATION ---------------------------
   Document Number : 20982       Detail Reference : 1.5-62

------------------------------- ADDITIONAL COMMENTS ----------------------------


-------------------------------------------------------------------------------
```

```
           ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

    Component: Circuit Breakers, Power
       Design: Unknown
 Normal State: Normally Closed
 Failure Mode: Spurious Open (Transfer Open)           Data Record Number:   1

---------------------------NUCLARR-CALCULATED-RATES-----------------------------
   Median:  2.568E-007   Upper Tolerance:  2.045E-006   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  7.964E+000

------------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
   Number of Failures   :      0        Number of Components  : ------
   Hours Per Component  : ------------  Demand Per Component  : --------
   Total Component Hours:       916000  Total Component Demand: --------

   Probability/Rate   :  3.900E-008     Type          : MEDIAN
   Variance           :  7.000E-014     Units         : F/H
   Standard Deviation : ------E----     Distribution  : DISCRETE

                        ----Lower----   ----Upper----   -Confidence/Coverage-
   Confidence Bounds  : ------E----     ------E----              -- %
   Tolerance Bounds   :  2.100E-010      4.200E-007              90 %
        Error Factor  : ------E----        Sided                 -- %
--------------------------------------------------------------------------------
 Component          1: Voltage level Unknown - DC
 Applications       2:
                    3:
--------------------------------------------------------------------------------
                 Origin                       Record Type
 Failure Data :   PLNT       PWWR-LERS-INCD-   -    -    -    -    -    -
 Exposure Data:   PLNT       TSTR-PMTR-CRLB-   -    -    -    -    -    -

 Data Collection Period:  75 through 80 (YY through YY)

 Include Circuit? : U          Originating Facilities : NEE3-    -    -
 Nuclear Origin?  : Y          Failure Degree    :
 Bayesian Update? : Y          Failure Severity  : C
 IRADAP Suitable? : Y          Include System?   : I  Systems : EI-  -  -  -
 Safety Grade?    : N
 Primary Failure? : U     Subsys. train :

----------------------------- REFERENCE INFORMATION ----------------------------
   Document Number : 21281        Detail Reference : 5-22

------------------------------ ADDITIONAL COMMENTS -----------------------------
 MEAN = 1.80E-07/H

--------------------------------------------------------------------------------
```

```
         ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

    Component: Circuit Breakers, Power
       Design: Unknown
 Normal State: Normally Closed
 Failure Mode: Spurious Open (Transfer Open)          Data Record Number:   2

─────────────────────────NUCLARR-CALCULATED-RATES─────────────────────────
   Median:  2.649E-007   Upper Tolerance:  2.110E-006   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  7.964E+000

────────────────────REFERENCE-RAW-and-PROBABILITY-DATA─────────────────────
   Number of Failures   :       0         Number of Components  : ------
   Hours Per Component  : ------------    Demand Per Component  : --------
   Total Component Hours:        888000   Total Component Demand: --------

   Probability/Rate   :  3.800E-008       Type          : MEDIAN
   Variance           :  2.900E-014       Units         : F/H
   Standard Deviation : ------E----       Distribution : DISCRETE

                        ───Lower───     ───Upper───   -Confidence/Coverage-
   Confidence Bounds  : ------E----     ------E----             -- %
   Tolerance Bounds   :  2.000E-009      2.500E-007             90 %
         Error Factor : ------E----        Sided                -- %

───────────────────────────────────────────────────────────────────────────
 Component          1: 600 VAC - 4.74 kVAC (single voltage)
 Applications       2:
                    3:
───────────────────────────────────────────────────────────────────────────
                Origin                        Record Type
 Failure Data :  PLNT       FMWR-LERS-INCD-   -    -    -    -    -    -
 Exposure Data:  PLNT       TSTR-PMTR-CRLB-   -    -    -    -    -    -

 Data Collection Period:  75 through 80 (YY through YY)

 Include Circuit? : U          Originating Facilities : NEE3-    -    -
 Nuclear Origin?  : Y          Failure Degree    :
 Bayesian Update? : Y          Failure Severity : C
 IRADAP Suitable? : Y          Include System?   : I  Systems : EA-  -  -  -
 Safety Grade?    : N
 Primary Failure? : U     Subsys. train :
─────────────────────────── REFERENCE INFORMATION ─────────────────────────
   Document Number : 21281       Detail Reference : 5-23
──────────────────────────── ADDITIONAL COMMENTS ──────────────────────────
 MEAN = 9.90E-08/H

───────────────────────────────────────────────────────────────────────────
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Circuit Breakers, Power
        Design: Unknown
  Normal State: Normally Closed
  Failure Mode: Spurious Open (Transfer Open)          Data Record Number:   3

 -------------------------NUCLARR CALCULATED RATES-----------------------------
   Median:  7.175E-007   Upper Tolerance:  1.816E-006   Aggregation Type: 1
   Mean  :  6.579E-007   Error Factor   :  2.532E+000

 ---------------------REFERENCE RAW and PROBABILITY DATA------------------------
   Number of Failures    :       2          Number of Components  : ------
   Hours Per Component   : ------------     Demand Per Component  : --------
   Total Component Hours:        3040000    Total Component Demand: --------

   Probability/Rate    :  2.000E-007        Type          : MEDIAN
   Variance            :  1.100E-013        Units         : F/H
   Standard Deviation  : ------E----        Distribution  : DISCRETE

                         ---Lower---      ---Upper---    -Confidence/Coverage-
   Confidence Bounds   : ------E----      ------E----               -- %
   Tolerance Bounds    :  4.500E-008       8.500E-007               90 %
         Error Factor  : ------E----         Sided                  -- %
 ------------------------------------------------------------------------------
 Component           1: < 599 VAC (voltage range)
 Applications        2:
                     3:
 ------------------------------------------------------------------------------
                 Origin                              Record Type
 Failure Data :   PLNT        PMMR-LERS-INCD-    -    -    -    -    -    -
 Exposure Data:   PLNT        TSTR-PMTR-CRLB-    -    -    -    -    -    -

 Data Collection Period:  75 through 80 (YY through YY)

 Include Circuit? : U          Originating Facilities : NEE3-    -    -
 Nuclear Origin?  : Y          Failure Degree     :
 Bayesian Update? : Y          Failure Severity : C
 IRADAP Suitable? : Y          Include System?  : I  Systems : EC-  -  -  -
 Safety Grade?    : N
 Primary Failure? : U    Subsys. train :
 ---------------------------- REFERENCE INFORMATION ----------------------------
   Document Number : 21281        Detail Reference : 5-23
 ----------------------------- ADDITIONAL COMMENTS -----------------------------
 MEAN = 4.00E-07/H

 ------------------------------------------------------------------------------
```

```
         ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Circuit Breakers, Power
        Design: Unknown
  Normal State: Normally Closed
  Failure Mode: Spurious Open (Transfer Open)          Data Record Number:   4

─────────────────────────────NUCLARR-CALCULATED-RATES──────────────────────────
    Median:  2.585E-007   Upper Tolerance:  2.059E-006   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  7.964E+000

─────────────────────────REFERENCE-RAW-and-PROBABILITY-DATA────────────────────
    Number of Failures    :      0        Number of Components  : ------
    Hours Per Component   : ------------  Demand Per Component  : --------
    Total Component Hours:        910000  Total Component Demand: --------

    Probability/Rate    :  2.320E-007     Type          : MEAN
    Variance            :  3.030E-013     Units         : F/H
    Standard Deviation : ------E----      Distribution : DISCRETE

                        ───Lower───   ───Upper───   -Confidence/Coverage-
    Confidence Bounds  : ------E----   ------E----              -- %
    Tolerance Bounds   : ------E----   ------E----              -- %
          Error Factor : ------E----       Sided                -- %

───────────────────────────────────────────────────────────────────────────────
  Component           1: Voltage level Unknown - AC
  Applications        2:
                      3:
───────────────────────────────────────────────────────────────────────────────
                Origin                      Record Type
  Failure Data :  PLNT      LERS-CRLB-PMLG-PMTR-DEVR-    -    -    -    -
  Exposure Data:  PLNT      MOPR-TSTR-    -    -    -    -    -    -    -

  Data Collection Period:  73 through 79 (YY through YY)

  Include Circuit? : U          Originating Facilities : ZIS1-ZIS2-    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?   : I  Systems : EA-EC-  -  -
  Safety Grade?    : N
  Primary Failure? : U     Subsys. train :

───────────────────────────── REFERENCE INFORMATION ───────────────────────────
     Document Number : 21381        Detail Reference : 1.5-75

───────────────────────────── ADDITIONAL COMMENTS ─────────────────────────────


───────────────────────────────────────────────────────────────────────────────
```

```
            ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Circuit Breakers, Power
         Design: Unknown
   Normal State: Normally Closed
   Failure Mode: Spurious Open (Transfer Open)          Data Record Number:   5

 ------------------------------NUCLARR-CALCULATED-RATES------------------------------
    Median:  5.299E-007   Upper Tolerance:  4.220E-006   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  7.964E+000

 -------------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
    Number of Failures   :      0          Number of Components   : ------
    Hours Per Component  : ------------    Demand Per Component   : --------
    Total Component Hours:       444000    Total Component Demand: --------

    Probability/Rate   :  4.810E-007       Type         : MEAN
    Variance           :  8.710E-013       Units        : F/H
    Standard Deviation : ------E----       Distribution : DISCRETE

                         ----Lower----   ----Upper----   -Confidence/Coverage-
    Confidence Bounds  : ------E----     ------E----               -- %
    Tolerance Bounds   : ------E----     ------E----               -- %
          Error Factor : ------E----        Sided                  -- %

 ------------------------------------------------------------------------------------
   Component           1: Voltage level Unknown - AC
   Applications        2:
                       3:
 ------------------------------------------------------------------------------------
                    Origin                         Record Type
   Failure Data :    PLNT       LERS-CRLB-PMLG-PMTR-SOCR-    -    -    -    -
   Exposure Data:    PLNT       MOPR-TSTR-   -    -    -    -    -    -    -

   Data Collection Period:  73 through 79 (YY through YY)

   Include Circuit? : U          Originating Facilities : IPS2-    -    -
   Nuclear Origin?  : Y          Failure Degree    :
   Bayesian Update? : Y          Failure Severity  : C
   IRADAP Suitable? : Y          Include System?   : I  Systems : EX-  -  -  -
   Safety Grade?    : U
   Primary Failure? : Y     Subsys. train :

 ------------------------------ REFERENCE INFORMATION ------------------------------
      Document Number : 20982       Detail Reference : 1.5-62

 ------------------------------ ADDITIONAL COMMENTS --------------------------------


 ------------------------------------------------------------------------------------
```

```
         ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

    Component: Conductors
       Design: Bus
 Normal State: Normally Energized
 Failure Mode: Fails to Operate                       Data Record Number:   1

---------------------------NUCLARR-CALCULATED-RATES-----------------------------
  Median:  5.421E-007  Upper Tolerance:  4.317E-006   Aggregation Type: 1
  Mean  : +0.000E+000  Error Factor   :  7.964E+000

------------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
  Number of Failures   :       0          Number of Components  : ------
  Hours Per Component  : ------------     Demand Per Component  : --------
  Total Component Hours:       434000     Total Component Demand: --------

  Probability/Rate   :  8.900E-008        Type         : MEDIAN
  Variance           :  6.300E-013        Units        : F/H
  Standard Deviation : ------E----        Distribution : DISCRETE

                      ----Lower----     ----Upper----   -Confidence/Coverage-
  Confidence Bounds  : ------E----      ------E----             -- %
  Tolerance Bounds   :  3.100E-009       1.500E-006             90 %
        Error Factor : ------E----         Sided                -- %

--------------------------------------------------------------------------------
 Component          1: Unknown Enclosure
 Applications       2: > 600 VAC (voltage range)
                    3:
--------------------------------------------------------------------------------
                 Origin                      Record Type
 Failure Data :   PLNT       PMMR-LERS-INCD-   -    -    -    -    -    -
 Exposure Data:   PLNT       TSTR-PMTR-CRLB-   -    -    -    -    -    -

 Data Collection Period:  75 through 80 (YY through YY)

 Include Circuit? : U          Originating Facilities : NEE3-    -    -
 Nuclear Origin?  : Y          Failure Degree    :
 Bayesian Update? : Y          Failure Severity : C
 IRADAP Suitable? : Y          Include System?   : I  Systems : EA-  -  -  -
 Safety Grade?    : N
 Primary Failure? : U     Subsys. train :
-------------------------- REFERENCE INFORMATION -------------------------------
   Document Number : 21281       Detail Reference : 5-22
--------------------------- ADDITIONAL COMMENTS --------------------------------
 MEAN = 6.20E-07/H

--------------------------------------------------------------------------------
```

```
          ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Conductors
        Design: Bus
  Normal State: Normally Energized
  Failure Mode: Fails to Operate                      Data Record Number:    2

 ------------------------NUCLARR-CALCULATED-RATES-------------------------------
    Median:  1.084E-007   Upper Tolerance:  8.633E-007   Aggregation Type: 1
    Mean   : +0.000E+000  Error Factor    :  7.964E+000

 --------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
    Number of Failures   :      0          Number of Components  : ------
    Hours Per Component  : ------------    Demand Per Component  : --------
    Total Component Hours:      2170000    Total Component Demand: --------

    Probability/Rate   :  2.800E-008       Type          : MEDIAN
    Variance           :  1.100E-013       Units         : F/H
    Standard Deviation : ------E----       Distribution  : DISCRETE

                         ----Lower----   ----Upper----   -Confidence/Coverage-
    Confidence Bounds  : ------E----      ------E----              -- %
    Tolerance Bounds   :  1.800E-009      8.300E-007               90 %
          Error Factor : ------E----        Sided                  -- %

 -------------------------------------------------------------------------------
  Component          1: Unknown Enclosure
  Applications       2: < 599 VAC (voltage range)
                     3:
 -------------------------------------------------------------------------------
                 Origin                         Record Type
  Failure Data :  PLNT      PMWR-LERS-INCD-     -    -    -    -    -    -
  Exposure Data:  PLNT      TSTR-PMTR-CRLB-     -    -    -    -    -    -

  Data Collection Period:  75 through 80 (YY through YY)

  Include Circuit? : U        Originating Facilities : NEE3-   -    -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : Y        Failure Severity  : C
  IRADAP Suitable? : Y        Include System?   : I  Systems : EC-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U     Subsys. train :

 ------------------------- REFERENCE INFORMATION -------------------------------
     Document Number : 21281       Detail Reference : 5-22

 -------------------------- ADDITIONAL COMMENTS --------------------------------
  MEAN = 1.80E-07/H

 -------------------------------------------------------------------------------
```

```
            ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Conductors
         Design: Bus
   Normal State: Normally Energized
   Failure Mode: Fails to Operate                       Data Record Number:   3

----------------------------NUCLARR-CALCULATED-RATES----------------------------
    Median:  7.764E-008   Upper Tolerance:  6.183E-007   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  7.964E+000

------------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures     :       0      Number of Components   : ------
    Hours Per Component    : ------------ Demand Per Component   : --------
    Total Component Hours:       3030000  Total Component Demand: --------

    Probability/Rate     :  1.910E-008    Type          : MEAN
    Variance             :  2.220E-015    Units         : F/H
    Standard Deviation : ------E----      Distribution : DISCRETE

                          ---Lower---    ---Upper---   -Confidence/Coverage-
    Confidence Bounds    : ------E----    ------E----             -- %
    Tolerance Bounds     : ------E----    ------E----             -- %
          Error Factor : ------E----        Sided                 -- %

--------------------------------------------------------------------------------
  Component            1: Voltage level Unknown (Unknown VAC/VDC)
  Applications         2: Unknown Enclosure
                       3:
--------------------------------------------------------------------------------
                Origin                   Record Type
  Failure Data :  PLNT      LERS-CRLB-PMLG-PMTR-DEVR-    -    -    -    -
  Exposure Data:  PLNT      MOPR-TSTR-   -    -    -    -    -    -    -    -

  Data Collection Period:  73 through 79 (YY through YY)

  Include Circuit? : U          Originating Facilities : ZIS1-ZIS2-    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : EA-EC-EI-  -
  Safety Grade?    : N
  Primary Failure? : U    Subsys. train :
---------------------------- REFERENCE INFORMATION -----------------------------
    Document Number : 21381      Detail Reference : 1.5-76
---------------------------- ADDITIONAL COMMENTS -------------------------------

--------------------------------------------------------------------------------
```

```
       ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

    Component: Conductors
       Design: Bus
 Normal State: Normally Energized
 Failure Mode: Fails to Operate                      Data Record Number:   4

-------------------------------NUCLARR-CALCULATED-RATES-------------------------------
   Median:  2.284E-007   Upper Tolerance:  1.819E-006   Aggregation Type: 1
   Mean   : +0.000E+000   Error Factor    :  7.964E+000

---------------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------------
   Number of Failures    :      0          Number of Components    : ------
   Hours Per Component   : ------------    Demand Per Component    : --------
   Total Component Hours:      1030000     Total Component Demand: --------

   Probability/Rate   :  2.800E-008        Type           : MEAN
   Variance           :  6.930E-015        Units          : F/H
   Standard Deviation : ------E----        Distribution : DISCRETE

                         ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds   : ------E----      ------E----                -- %
   Tolerance Bounds    : ------E----      ------E----                -- %
         Error Factor  : ------E----         Sided                   -- %

--------------------------------------------------------------------------------------
 Component            1: Unknown Enclosure
 Applications         2: Voltage level Unknown (Unknown VAC/VDC)
                      3:
--------------------------------------------------------------------------------------
                  Origin                        Record Type
 Failure Data :    PLNT      LERS-CRLB-PMLG-PMTR-SOCR-    -    -    -    -
 Exposure Data:    PLNT      MOPR-TSTR-   -    -    -    -    -    -    -

 Data Collection Period:  73 through 79 (YY through YY)

 Include Circuit? : U         Originating Facilities : IPS2-    -    -
 Nuclear Origin?  : Y         Failure Degree    :
 Bayesian Update? : Y         Failure Severity : C
 IRADAP Suitable? : Y         Include System?   : I  Systems : EX-EI-  -
 Safety Grade?    : Y
 Primary Failure? : Y    Subsys. train :

------------------------------ REFERENCE INFORMATION ----------------------------------
   Document Number : 20982        Detail Reference : 1.5-63

------------------------------- ADDITIONAL COMMENTS -----------------------------------


--------------------------------------------------------------------------------------
```

```
           ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Electrical Function Items
         Design: Panel
   Normal State: Normally Energized
   Failure Mode: Fails to Operate                      Data Record Number:   1

 ------------------------NUCLARR-CALCULATED-RATES-------------------------------
    Median:  6.095E-007   Upper Tolerance:  4.854E-006   Aggregation Type: 1
    Mean   : +0.000E+000  Error Factor    :  7.964E+000

 ---------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------------
    Number of Failures   :      0       Number of Components  : ------
    Hours Per Component  : ------------ Demand Per Component  : --------
    Total Component Hours:       386000 Total Component Demand: --------

    Probability/Rate   :  1.300E-007    Type          : MEDIAN
    Variance           :  3.500E-013    Units         : F/H
    Standard Deviation : ------E----    Distribution  : DISCRETE

                         ----Lower----   ----Upper----  -Confidence/Coverage-
    Confidence Bounds  : ------E----     ------E----             -- %
    Tolerance Bounds   :  3.100E-010      8.300E-007             90 %
          Error Factor : ------E----        Sided                -- %

 -------------------------------------------------------------------------------
   Component            1: < 125 VAC (single voltage)
   Applications         2: Unknown Instrumentation
                        3: Unknown Instrumentation Type
 -------------------------------------------------------------------------------
                 Origin                       Record Type
   Failure Data :  PLNT      PWWR-LERS-INCD-   -   -   -   -   -   -
   Exposure Data:  PLNT      TSTR-PMTR-CRLB-   -   -   -   -   -   -

   Data Collection Period:  75 through 80 (YY through YY)

   Include Circuit? : U         Originating Facilities : NEE3-   -   -
   Nuclear Origin?  : Y         Failure Degree    :
   Bayesian Update? : Y         Failure Severity  : C
   IRADAP Suitable? : Y         Include System?   : I  Systems : EC-  -  -  -
   Safety Grade?    : N
   Primary Failure? : U     Subsys. train :

 ---------------------------- REFERENCE INFORMATION ----------------------------
      Document Number : 21281      Detail Reference : 5-22

 ----------------------------- ADDITIONAL COMMENTS -----------------------------
   MEAN = 3.80E-07/H

 -------------------------------------------------------------------------------
```

```
           ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Electrical Piece Parts
        Design: Diode/Rectifier
  Normal State: Normally Energized
  Failure Mode: Fails to Operate                         Data Record Number:   1

  ----------------------------NUCLARR-CALCULATED-RATES-------------------------
    Median:  3.085E-006   Upper Tolerance:  1.007E-005   Aggregation Type: 1
    Mean  :  2.591E-006   Error Factor   :  3.265E+000

  ------------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
    Number of Failures    :      1         Number of Components   : ------
    Hours Per Component   : ------------   Demand Per Component   : --------
    Total Component Hours:         386000  Total Component Demand: --------

    Probability/Rate    :  2.000E-006      Type         : MEDIAN
    Variance            :  6.900E-012      Units        : F/H
    Standard Deviation  : ------E----      Distribution : DISCRETE

                          ---Lower---     ---Upper---    -Confidence/Coverage-
    Confidence Bounds   : ------E----     ------E----               -- %
    Tolerance Bounds    :  4.100E-007      6.800E-006               90 %
          Error Factor  : ------E----        Sided                  -- %
  -----------------------------------------------------------------------------
  Component          1:
  Applications       2: Voltage level Unknown (Unknown VAC/VDC)
                     3:
  -----------------------------------------------------------------------------
                    Origin                      Record Type
  Failure Data :    PLNT       PMWR-LERS-INCD-    -    -    -    -    -    -
  Exposure Data:    PLNT       TSTR-PMTR-CRLB-    -    -    -    -    -    -

  Data Collection Period:  75 through 80 (YY through YY)

  Include Circuit? : U        Originating Facilities : NEE3-    -    -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : Y        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I  Systems : ZZ-  -  -  -
  Safety Grade?    : U
  Primary Failure? : U    Subsys. train :
  ---------------------------- REFERENCE INFORMATION --------------------------
     Document Number : 21281       Detail Reference : 5-22
  ---------------------------- ADDITIONAL COMMENTS ----------------------------
  MEAN = 3.70E-06/H

  -----------------------------------------------------------------------------
```

```
          ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Run                          Data Record Number:  1

--------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  8.534E-003   Upper Tolerance:  1.066E-002   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  1.249E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
    Number of Failures     :      0       Number of Components  :      3
    Hours Per Component    : ------------ Demand Per Component  : --------
    Total Component Hours: ------------   Total Component Demand:     179

    Probability/Rate     : ------E----    Type         :
    Variance             : ------E----    Units        :
    Standard Deviation : ------E----      Distribution :

                           ----Lower----   ----Upper----  -Confidence/Coverage-
    Confidence Bounds    : ------E----     ------E----              -- %
    Tolerance Bounds     : ------E----     ------E----              -- %
           Error Factor : ------E----         Sided                 -- %

-----------------------------------------------------------------------------
  Component          1: 250 - 599 VAC (single voltage)
  Applications       2:
                     3:
-----------------------------------------------------------------------------
                  Origin                        Record Type
  Failure Data :   PLNT       TSTR-ADLG-OTHR-    -   -   -   -   -   -
  Exposure Data:   PLNT       TSTR-ADLG-OTHR-    -   -   -   -   -   -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y        Originating Facilities : YKR1-    -    -
  Nuclear Origin?  : Y        Failure Degree     :
  Bayesian Update? : N        Failure Severity : C
  IRADAP Suitable? : Y        Include System?   : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y    Subsys. train : desig: 1,2,3

-------------------------- REFERENCE INFORMATION ----------------------------
    Document Number : 13386        Detail Reference : PG. A-10

--------------------------- ADDITIONAL COMMENTS -----------------------------
  OTHR = survey of utilities; includes tests; a "demand" is the required
  load-run duration (generally = > 1 hr)
-----------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

```
   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run                          Data Record Number:  2

-----------------------NUCLARR-CALCULATED-RATES------------------------------
  Median: 3.474E-002  Upper Tolerance: 7.539E-002  Aggregation Type: 1
  Mean  : 3.297E-002  Error Factor   : 2.170E+000

--------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
  Number of Failures    :      3         Number of Components  :      3
  Hours Per Component   : ------------   Demand Per Component  : --------
  Total Component Hours: ------------    Total Component Demand:      91

  Probability/Rate    : ------E----      Type         :
  Variance            : ------E----      Units        :
  Standard Deviation : ------E----       Distribution :

                      ----Lower----   ----Upper----   -Confidence/Coverage-
  Confidence Bounds  : ------E----     ------E----               -- %
  Tolerance Bounds   : ------E----     ------E----               -- %
        Error Factor : ------E----        Sided                  -- %

-----------------------------------------------------------------------------
Component          1: Voltage level Unknown - AC
Applications       2:
                   3:
-----------------------------------------------------------------------------
                Origin                       Record Type
Failure Data :   PLNT     TSTR-ADLG-OTHR-   -    -    -    -    -    -
Exposure Data:   PLNT     TSTR-ADLG-OTHR-   -    -    -    -    -    -

Data Collection Period:  84 through 85 (YY through YY)

Include Circuit? : Y        Originating Facilities : WNP2-    -    -
Nuclear Origin?  : Y        Failure Degree    :
Bayesian Update? : N        Failure Severity : C
IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y    Subsys. train : desig: 1A,1B,1C

------------------------- REFERENCE INFORMATION -----------------------------
  Document Number : 13386       Detail Reference : PG. A-10

-------------------------- ADDITIONAL COMMENTS ------------------------------
OTHR = survey of utilites; includes tests; a "demand" is the required
load-run duration (generally = > 1 hr)
-----------------------------------------------------------------------------
```

```
          ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

      Component: Generator, with Diesel Engine Driver
         Design: Generator
   Normal State: Normally Standby
   Failure Mode: Fails to Run                       Data Record Number:   3

--------------------------NUCLARR-CALCULATED-RATES-----------------------------
    Median:  1.216E-002   Upper Tolerance:  1.522E-002   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  1.252E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures    :      0        Number of Components   :      2
    Hours Per Component   : ------------  Demand Per Component   : --------
    Total Component Hours: ------------   Total Component Demand:      125

    Probability/Rate    : ------E----     Type         :
    Variance            : ------E----     Units        :
    Standard Deviation : ------E----      Distribution :

                         ---Lower---     ---Upper---   -Confidence/Coverage-
    Confidence Bounds  : ------E----     ------E----              -- %
    Tolerance Bounds   : ------E----     ------E----              -- %
          Error Factor : ------E----        Sided                 -- %

-------------------------------------------------------------------------------
   Component           1: 600 VAC - 8.24 kVAC (voltage range)
   Applications        2:
                       3:
-------------------------------------------------------------------------------
                  Origin                        Record Type
   Failure Data :  PLNT       TSTR-ADLG-OTHR-   -    -    -    -    -    -
   Exposure Data:  PLNT       TSTR-ADLG-OTHR-   -    -    -    -    -    -

   Data Collection Period:  83 through 85 (YY through YY)

   Include Circuit? : Y          Originating Facilities : VYS1-    -    -
   Nuclear Origin?  : Y          Failure Degree    :
   Bayesian Update? : N          Failure Severity : C
   IRADAP Suitable? : Y          Include System?   : I  Systems : EK-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : Y     Subsys. train : desig: A,B

----------------------------- REFERENCE INFORMATION ---------------------------
     Document Number : 13386        Detail Reference : PG. A-10

------------------------------ ADDITIONAL COMMENTS ----------------------------
   OTHR = survey of utilities; includes tests; a "demand" is the required
   load-run duration (generally = > 1 hr)
-------------------------------------------------------------------------------
```

```
         ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Run                          Data Record Number:   4

-------------------------NUCLARR-CALCULATED-RATES-------------------------
  Median:  3.967E-002  Upper Tolerance:  7.413E-002  Aggregation Type: 1
  Mean  :  3.846E-002  Error Factor   :  1.869E+000

--------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
  Number of Failures     :      5        Number of Components   :      2
  Hours Per Component    : ------------  Demand Per Component   : --------
  Total Component Hours: ------------    Total Component Demand:      130

  Probability/Rate    : ------E----      Type         :
  Variance            : ------E----      Units        :
  Standard Deviation : ------E----       Distribution :

                        ----Lower----   ----Upper----  -Confidence/Coverage-
  Confidence Bounds   : ------E----     ------E----              -- %
  Tolerance Bounds    : ------E----     ------E----              -- %
        Error Factor : ------E----         Sided                 -- %

--------------------------------------------------------------------------
 Component           1: 600 VAC - 8.24 kVAC (voltage range)
 Applications        2:
                     3:
--------------------------------------------------------------------------
                Origin                       Record Type
 Failure Data :  PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -
 Exposure Data:  PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -

 Data Collection Period:  83 through 85 (YY through YY)

 Include Circuit? : Y        Originating Facilities : TNP1-    -    -
 Nuclear Origin?  : Y        Failure Degree    :
 Bayesian Update? : N        Failure Severity : C
 IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y    Subsys. train : desig: EAST, WEST

--------------------------- REFERENCE INFORMATION -------------------------
   Document Number : 13386        Detail Reference : PG. A-10

---------------------------- ADDITIONAL COMMENTS --------------------------
 OTHR = survey of utilities; includes tests; a "demand" is the required
 load-run duration (generally = > 1hr)
--------------------------------------------------------------------------
```

```
    ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

      Component: Generator, with Diesel Engine Driver
         Design: Generator
   Normal State: Normally Standby
   Failure Mode: Fails to Run                          Data Record Number:   5

--------------------------NUCLARR-CALCULATED-RATES-------------------------
    Median:  9.007E-003   Upper Tolerance:  2.944E-002   Aggregation Type: 1
    Mean  :  7.634E-003   Error Factor   :  3.269E+000

---------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
    Number of Failures    :      1        Number of Components  :      2
    Hours Per Component   : ------------  Demand Per Component  : --------
    Total Component Hours: ------------   Total Component Demand:      131

    Probability/Rate    : ------E----     Type          :
    Variance            : ------E----     Units         :
    Standard Deviation  : ------E----     Distribution  :

                          ----Lower----   ----Upper----  -Confidence/Coverage-
    Confidence Bounds   : ------E----     ------E----            -- %
    Tolerance Bounds    : ------E----     ------E----            -- %
          Error Factor  : ------E----        Sided               -- %

---------------------------------------------------------------------------
  Component           1: 600 VAC - 8.24 kVAC (voltage range)
  Applications        2:
                      3:
---------------------------------------------------------------------------
                 Origin                      Record Type
  Failure Data :  PLNT       TSTR-ADLG-OTHR-   -    -    -    -    -    -
  Exposure Data:  PLNT       TSTR-ADLG-OTHR-   -    -    -    -    -    -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y       Originating Facilities : TMI1-     -    -
  Nuclear Origin?  : Y       Failure Degree     :
  Bayesian Update? : N       Failure Severity : C
  IRADAP Suitable? : Y       Include System?  : I  Systems : EK-  -   -   -
  Safety Grade?    : Y
  Primary Failure? : Y    Subsys. train : desig: 1A, 1B

-------------------------- REFERENCE INFORMATION --------------------------
    Document Number : 13386       Detail Reference : PG. A-10

--------------------------- ADDITIONAL COMMENTS ---------------------------
  OTHR = survey of utilities; includes tests; a "demand" is the required
  load-run duration (generally = > 1 hr)
---------------------------------------------------------------------------
```

```
          ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Run                       Data Record Number:   6

------------------------NUCLARR-CALCULATED-RATES----------------------------
   Median:  1.261E-003  Upper Tolerance:  4.163E-003  Aggregation Type: 1
   Mean  :  1.066E-003  Error Factor   :  3.301E+000

--------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
   Number of Failures   :      1        Number of Components  :     4
   Hours Per Component  : ------------  Demand Per Component  : --------
   Total Component Hours: ------------  Total Component Demand:    938

   Probability/Rate   : ------E----     Type         :
   Variance           : ------E----     Units        :
   Standard Deviation : ------E----     Distribution :

                        ---Lower---   ---Upper---  -Confidence/Coverage-
   Confidence Bounds  : ------E----   ------E----           -- %
   Tolerance Bounds   : ------E----   ------E----           -- %
         Error Factor : ------E----      Sided              -- %

----------------------------------------------------------------------------
  Component          1: 600 VAC - 8.24 kVAC (voltage range)
  Applications       2:
                     3:
----------------------------------------------------------------------------
                  Origin                        Record Type
  Failure Data :   PLNT      TSTR-ADLG-OTHR-    -   -   -   -   -   -
  Exposure Data:   PLNT      TSTR-ADLG-OTHR-    -   -   -   -   -   -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y        Originating Facilities : SES -   -   -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : N        Failure Severity : C
  IRADAP Suitable? : Y        Include System?   : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y     Subsys. train : desig: A, B, C, D

------------------------- REFERENCE INFORMATION ----------------------------
   Document Number : 13386       Detail Reference : PG. A-9, 10

------------------------- ADDITIONAL COMMENTS ------------------------------
  OTHR = survey of utilities; includes tests; a "demand" is the required
  load-run duration (generally = > 1 hr)
----------------------------------------------------------------------------
```

```
         ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

    Component: Generator, with Diesel Engine Driver
       Design: Generator
 Normal State: Normally Standby
 Failure Mode: Fails to Run                          Data Record Number:   7

---------------------------NUCLARR-CALCULATED-RATES----------------------------
   Median: 4.216E-002   Upper Tolerance: 7.510E-002   Aggregation Type: 1
   Mean  : 4.110E-002   Error Factor   : 1.781E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
   Number of Failures    :      6        Number of Components  :      2
   Hours Per Component   : ------------  Demand Per Component  : --------
   Total Component Hours: ------------   Total Component Demand:    146

   Probability/Rate    : ------E----     Type         :
   Variance            : ------E----     Units        :
   Standard Deviation  : ------E----     Distribution :

                         ---Lower---     ---Upper---    -Confidence/Coverage-
   Confidence Bounds   : ------E----     ------E----             -- %
   Tolerance Bounds    : ------E----     ------E----             -- %
        Error Factor   : ------E----        Sided                -- %

-------------------------------------------------------------------------------
 Component          1: 600 VAC - 8.24 kVAC (voltage range)
 Applications       2:
                    3:
-------------------------------------------------------------------------------
                 Origin                      Record Type
 Failure Data :   PLNT      TSTR-ADLG-OTHR-     -    -    -    -    -    -
 Exposure Data:   PLNT      TSTR-ADLG-OTHR-     -    -    -    -    -    -

 Data Collection Period:  84 through 85 (YY through YY)

 Include Circuit? : Y        Originating Facilities : VCSJ-     -     -
 Nuclear Origin?  : Y        Failure Degree    :
 Bayesian Update? : N        Failure Severity : C
 IRADAP Suitable? : Y        Include System?   : I  Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y    Subsys. train : desig: A, B

------------------------ REFERENCE INFORMATION --------------------------------
   Document Number : 13386         Detail Reference : PG. A-9

------------------------ ADDITIONAL COMMENTS ----------------------------------
 OTHR = survey of utilities; includes tests; a "demand" is the required
 load-run duration (generally = > 1 hr)
-------------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

Component: Generator, with Diesel Engine Driver
Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run
Data Record Number: 8

NUCLARR-CALCULATED-RATES

Median:	1.897E-002	Upper Tolerance:	6.132E-002	Aggregation Type: 1
Mean :	1.613E-002	Error Factor :	3.232E+000	

REFERENCE-RAW-and-PROBABILITY-DATA

Number of Failures :	1	Number of Components :	1
Hours Per Component :	------------	Demand Per Component :	--------
Total Component Hours:	------------	Total Component Demand:	62

Probability/Rate :	------E----	Type :	
Variance :	------E----	Units :	
Standard Deviation :	------E----	Distribution :	

	Lower	Upper	-Confidence/Coverage-
Confidence Bounds :	------E----	------E----	-- %
Tolerance Bounds :	------E----	------E----	-- %
Error Factor :	------E----	Sided	-- %

Component Applications
1: 600 VAC - 8.24 kVAC (voltage range)
2:
3:

	Origin	Record Type
Failure Data :	PLNT	TSTR-ADLG-OTHR- - - - - - -
Exposure Data:	PLNT	TSTR-ADLG-OTHR- - - - - - -

Data Collection Period: 84 through 85 (YY through YY)

Include Circuit? : Y
Nuclear Origin? : Y
Bayesian Update? : N
IRADAP Suitable? : Y
Safety Grade? : Y
Primary Failure? : Y
Originating Facilities : SLS2- - -
Failure Degree :
Failure Severity : C
Include System? : I Systems : EK- - - -
Subsys. train : desig: 2B

REFERENCE INFORMATION

Document Number : 13386
Detail Reference : PG. A-9

ADDITIONAL COMMENTS

OTHR = survey of utilities; includes tests; a "demand" is the required load-run duration (generally = > 1 hr); rating = 3685 KW

```
      ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run                        Data Record Number:   9

-------------------------NUCLARR-CALCULATED-RATES---------------------------
  Median:  1.757E-002   Upper Tolerance:  5.686E-002   Aggregation Type: 1
  Mean  :  1.493E-002   Error Factor   :  3.236E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
  Number of Failures    :      1        Number of Components  :       1
  Hours Per Component   : ------------  Demand Per Component  : --------
  Total Component Hours: ------------   Total Component Demand:      67

  Probability/Rate   : ------E----      Type         :
  Variance           : ------E----      Units        :
  Standard Deviation : ------E----      Distribution :

                       ---Lower---     ---Upper---   -Confidence/Coverage-
  Confidence Bounds  : ------E----     ------E----            -- %
  Tolerance Bounds   : ------E----     ------E----            -- %
        Error Factor : ------E----        Sided               -- %

----------------------------------------------------------------------------
Component          1: 600 VAC - 8.24 kVAC (voltage range)
Applications       2:
                   3:
----------------------------------------------------------------------------
                 Origin                   Record Type
Failure Data :   PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -
Exposure Data:   PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -

Data Collection Period:  84 through 85 (YY through YY)

Include Circuit? : Y        Originating Facilities : SLS2-    -    -
Nuclear Origin?  : Y        Failure Degree    :
Bayesian Update? : N        Failure Severity : C
IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y    Subsys. train : desig: 2A
------------------------- REFERENCE INFORMATION ----------------------------
  Document Number : 13386       Detail Reference : PG. A-9
------------------------- ADDITIONAL COMMENTS ------------------------------
OTHR = survey of utilities; includes tests; a "demand" is the required
load-run duration (generally = > 1 hr); rating = 3500 KW
----------------------------------------------------------------------------
```

```
              ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Run                           Data Record Number:  10

-------------------------NUCLARR-CALCULATED-RATES-------------------------------
   Median:  3.436E-002   Upper Tolerance:  7.459E-002   Aggregation Type: 1
   Mean  :  3.261E-002   Error Factor   :  2.171E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------------
   Number of Failures    :      3          Number of Components  :      2
   Hours Per Component   : ------------    Demand Per Component  : --------
   Total Component Hours: ------------     Total Component Demand:      92

   Probability/Rate    : ------E----        Type          :
   Variance            : ------E----        Units         :
   Standard Deviation  : ------E----        Distribution  :

                        ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds   : ------E----      ------E----              -- %
   Tolerance Bounds    : ------E----      ------E----              -- %
         Error Factor  : ------E----         Sided                 -- %

--------------------------------------------------------------------------------
  Component          1: 600 VAC - 8.24 kVAC (voltage range)
  Applications       2:
                     3:
--------------------------------------------------------------------------------
                  Origin                     Record Type
  Failure Data :   PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -
  Exposure Data:   PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y        Originating Facilities : SLS1-    -    -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : N        Failure Severity  : C
  IRADAP Suitable? : Y        Include System?   : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y     Subsys. train : desig: 1A, 1B

----------------------------- REFERENCE INFORMATION ----------------------------
     Document Number : 13386       Detail Reference : PG. A-9

------------------------------- ADDITIONAL COMMENTS ----------------------------
  OTHR = survey of utilities; includes tests; a "demand" is the required
  load-run duration (generally = > 1 hr)

--------------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

Component: Generator, with Diesel Engine Driver
Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run
Data Record Number: 11

NUCLARR-CALCULATED-RATES

Median: 1.367E-002
Mean : +0.000E+000
Upper Tolerance: 1.711E-002
Error Factor : 1.252E+000
Aggregation Type: 1

REFERENCE-RAW-and-PROBABILITY-DATA

Number of Failures : 0
Hours Per Component : ------------
Total Component Hours: ------------
Number of Components : 2
Demand Per Component : --------
Total Component Demand: 111

Probability/Rate : ------E----
Variance : ------E----
Standard Deviation : ------E----
Type :
Units :
Distribution :

	Lower	Upper	Confidence/Coverage
Confidence Bounds :	------E----	------E----	-- %
Tolerance Bounds :	------E----	------E----	-- %
Error Factor :	------E----	Sided	-- %

Component Applications
1: 600 VAC - 8.24 kVAC (voltage range)
2:
3:

	Origin	Record Type
Failure Data :	PLNT	TSTR-ADLG-OTHR- - - - - - -
Exposure Data:	PLNT	TSTR-ADLG-OTHR- - - - - - -

Data Collection Period: 83 through 85 (YY through YY)

Include Circuit? : Y
Nuclear Origin? : Y
Bayesian Update? : N
IRADAP Suitable? : Y
Safety Grade? : Y
Primary Failure? : Y
Originating Facilities : SNP2- - -
Failure Degree :
Failure Severity : C
Include System? : I
Systems : EK- - - -
Subsys. train : desig: 2A-A, 2B-B

REFERENCE INFORMATION

Document Number : 13386
Detail Reference : PG. A-9

ADDITIONAL COMMENTS

OTHR = survey of utilities; includes tests; a "demand" is the required load-run duration (generally = > 1 hr)

```
           ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run                              Data Record Number:  12

-------------------------NUCLARR-CALCULATED-RATES------------------------------
  Median:  1.072E-002   Upper Tolerance:  3.498E-002   Aggregation Type: 1
  Mean  :  9.091E-003   Error Factor   :  3.263E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
  Number of Failures    :      1         Number of Components  :      2
  Hours Per Component   : ------------   Demand Per Component  : --------
  Total Component Hours: ------------    Total Component Demand:      110

  Probability/Rate     : ------E----     Type         :
  Variance             : ------E----     Units        :
  Standard Deviation   : ------E----     Distribution :

                         ---Lower---    ---Upper---    -Confidence/Coverage-
  Confidence Bounds    : ------E----    ------E----              -- %
  Tolerance Bounds     : ------E----    ------E----              -- %
        Error Factor   : ------E----       Sided                 -- %

-------------------------------------------------------------------------------
Component           1: 600 VAC - 8.24 kVAC (voltage range)
Applications        2:
                    3:
-------------------------------------------------------------------------------
                Origin                         Record Type
Failure Data :   PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -
Exposure Data:   PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -

Data Collection Period:  83 through 85 (YY through YY)

Include Circuit? : Y          Originating Facilities : SNP1-    -    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : N          Failure Severity : C
IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y    Subsys. train : desig: 1A-A, 1B-B

----------------------------- REFERENCE INFORMATION ----------------------------
   Document Number : 13306       Detail Reference : PG. A-9

----------------------------- ADDITIONAL COMMENTS -----------------------------
OTHR =  survey of utilities; includes tests; a "demand" is the required
load-run duration (generally = > 1 hr)

-------------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run                        Data Record Number:  13

------------------------NUCLARR-CALCULATED-RATES---------------------------
  Median:  9.740E-003  Upper Tolerance:  7.928E-002  Aggregation Type: 1
  Mean  : +0.000E+000  Error Factor   :  8.139E+000

-------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
  Number of Failures   :       0        Number of Components  :       2
  Hours Per Component  : ------------   Demand Per Component  : --------
  Total Component Hours: ------------   Total Component Demand:      23

  Probability/Rate   : ------E----      Type         :
  Variance           : ------E----      Units        :
  Standard Deviation : ------E----      Distribution :

                       ----Lower----   ----Upper----  -Confidence/Coverage-
  Confidence Bounds  : ------E----     ------E----               -- %
  Tolerance Bounds   : ------E----     ------E----               -- %
       Error Factor  : ------E----        Sided                  -- %

---------------------------------------------------------------------------
Component           1: 600 VAC - 8.24 kVAC (voltage range)
Applications        2:
                    3:
---------------------------------------------------------------------------
                 Origin                        Record Type
Failure Data :    PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -
Exposure Data:    PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -

Data Collection Period:  85 through 85 (YY through YY)

Include Circuit? : Y        Originating Facilities : SOS3-    -    -
Nuclear Origin?  : Y        Failure Degree    :
Bayesian Update? : N        Failure Severity : C
IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y    Subsys. train : desig: 36002, 36003

------------------------------ REFERENCE INFORMATION ----------------------
   Document Number : 13386      Detail Reference : PG. A-9

------------------------------- ADDITIONAL COMMENTS -----------------------
OTHR = survey of utilities; includes tests; a "demand" is the required
load-run duration (generally = > 1 hr)
---------------------------------------------------------------------------
```

```
           ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Run                            Data Record Number:  14

─────────────────────────NUCLARR CALCULATED RATES─────────────────────────
    Median:  5.137E-003   Upper Tolerance:  4.247E-002   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  8.268E+000

──────────────────────REFERENCE RAW and PROBABILITY DATA──────────────────────
    Number of Failures   :       0          Number of Components  :      2
    Hours Per Component  : ------------     Demand Per Component  : --------
    Total Component Hours: ------------     Total Component Demand:       44

    Probability/Rate   : ------E----        Type         :
    Variance           : ------E----        Units        :
    Standard Deviation : ------E----        Distribution :

                         ───Lower───     ───Upper───    -Confidence/Coverage-
    Confidence Bounds  : ------E----     ------E----              -- %
    Tolerance Bounds   : ------E----     ------E----              -- %
          Error Factor : ------E----        Sided                 -- %

──────────────────────────────────────────────────────────────────────────
  Component          1: 600 VAC - 8.24 kVAC (voltage range)
  Applications       2:
                     3:
──────────────────────────────────────────────────────────────────────────

                 Origin                          Record Type
  Failure Data :   PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -
  Exposure Data:   PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -

  Data Collection Period:  84 through 85 (YY through YY)

  Include Circuit? : Y          Originating Facilities : SOS2-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y     Subsys. train : desig: 26002, 26003

──────────────────────────── REFERENCE INFORMATION ────────────────────────────
     Document Number : 13386        Detail Reference : PG. A-9

──────────────────────────── ADDITIONAL COMMENTS ──────────────────────────────
  OTHR = survey of utilities; includes tests; a "demand" is the required
  load-run duration (generally = > 1 hr)
──────────────────────────────────────────────────────────────────────────
```

```
         ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

    Component: Generator, with Diesel Engine Driver
       Design: Generator
 Normal State: Normally Standby
 Failure Mode: Fails to Run                          Data Record Number:  15

-----------------------------NUCLARR-CALCULATED-RATES------------------------
   Median:  1.074E-002  Upper Tolerance:  2.166E-002  Aggregation Type: 1
   Mean  :  1.031E-002  Error Factor   :  2.017E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
   Number of Failures     :      4        Number of Components  :      3
   Hours Per Component    : ------------  Demand Per Component  : --------
   Total Component Hours: ------------    Total Component Demand:      388

   Probability/Rate     : ------E----     Type          :
   Variance             : ------E----     Units         :
   Standard Deviation : ------E----       Distribution :

                         ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds    : ------E----     ------E----              -- %
   Tolerance Bounds     : ------E----     ------E----              -- %
         Error Factor   : ------E----        Sided                 -- %

-----------------------------------------------------------------------------
 Component           1: 600 VAC - 8.24 kVAC (voltage range)
 Applications        2:
                     3:
-----------------------------------------------------------------------------
                   Origin                      Record Type
 Failure Data :    PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -
 Exposure Data:    PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -

 Data Collection Period:  83 through 85 (YY through YY)

 Include Circuit? : Y        Originating Facilities : SGS2-   -   -
 Nuclear Origin?  : Y        Failure Degree     :
 Bayesian Update? : N        Failure Severity : C
 IRADAP Suitable? : Y        Include System?   : I   Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y    Subsys. train : desig: 2A, 2B, 2C
------------------------------ REFERENCE INFORMATION --------------------------
   Document Number : 13386        Detail Reference : PG. A-8, 9
------------------------------ ADDITIONAL COMMENTS ----------------------------
 OTHR = survey of utilities; includes tests; a "demand" is the required
 load-run duration (generally = > 1 hr)
-----------------------------------------------------------------------------
```

```
         ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

      Component: Generator, with Diesel Engine Driver
         Design: Generator
   Normal State: Normally Standby
   Failure Mode: Fails to Run                        Data Record Number:  16

-----------------------NUCLARR-CALCULATED-RATES-------------------------------
     Median:  7.664E-003   Upper Tolerance:  2.509E-002   Aggregation Type: 1
     Mean  :  6.494E-003   Error Factor    :  3.274E+000

---------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
     Number of Failures   :      1        Number of Components  :      3
     Hours Per Component  : ------------  Demand Per Component  : --------
     Total Component Hours: ------------  Total Component Demand:      154

     Probability/Rate   : ------E----     Type         :
     Variance           : ------E----     Units        :
     Standard Deviation : ------E----     Distribution :

                          ---Lower---     ---Upper---    -Confidence/Coverage-
     Confidence Bounds  : ------E----     ------E----            -- %
     Tolerance Bounds   : ------E----     ------E----            -- %
           Error Factor : ------E----        Sided               -- %

------------------------------------------------------------------------------
   Component          1: 600 VAC - 8.24 kVAC (voltage range)
   Applications       2:
                      3:
------------------------------------------------------------------------------
                   Origin                      Record Type
   Failure Data :   PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -
   Exposure Data:   PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -

   Data Collection Period:  83 through 85 (YY through YY)

   Include Circuit? : Y         Originating Facilities : SGS1-    -    -
   Nuclear Origin?  : Y         Failure Degree    :
   Bayesian Update? : N         Failure Severity : C
   IRADAP Suitable? : Y         Include System?  : I  Systems : EK-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : Y     Subsys. train : desig: 1A, 1B, 1C

---------------------------- REFERENCE INFORMATION ---------------------------
     Document Number : 13386        Detail Reference : PG. A-8

----------------------------- ADDITIONAL COMMENTS ----------------------------
   OTHR = survey of utilities; includes tests; a "demand" is the required
   load-run duration (generally = > 1 hr)

------------------------------------------------------------------------------
```

```
         ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run                         Data Record Number:  17

--------------------------NUCLARR-CALCULATED-RATES----------------------------
  Median:  1.781E-002  Upper Tolerance:  3.361E-002  Aggregation Type: 1
  Mean  :  1.724E-002  Error Factor   :  1.887E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
  Number of Failures   :      5          Number of Components  :      2
  Hours Per Component  : ------------    Demand Per Component  : --------
  Total Component Hours: ------------    Total Component Demand:      290

  Probability/Rate    : ------E----      Type         :
  Variance            : ------E----      Units        :
  Standard Deviation  : ------E----      Distribution :

                        ----Lower----   ----Upper----   -Confidence/Coverage-
  Confidence Bounds   : ------E----     ------E----               -- %
  Tolerance Bounds    : ------E----     ------E----               -- %
        Error Factor  : ------E----        Sided                  -- %

------------------------------------------------------------------------------
Component          1: 250 - 599 VAC (single voltage)
Applications       2:
                   3:
------------------------------------------------------------------------------
                Origin                        Record Type
Failure Data :   PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -
Exposure Data:   PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -

Data Collection Period:  83 through 85 (YY through YY)

Include Circuit? : Y          Originating Facilities : HBR2-    -    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : N          Failure Severity  : C
IRADAP Suitable? : Y          Include System?   : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y     Subsys. train : desig: A, B

------------------------------- REFERENCE INFORMATION ------------------------
   Document Number : 13386       Detail Reference : PG. A-8

------------------------------- ADDITIONAL COMMENTS --------------------------
OTHR = survey of utilities; includes tests; a "demand" is the required
load-run duration (generally = > 1 hr)

------------------------------------------------------------------------------
```

```
            ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run                           Data Record Number:  18

-------------------------NUCLARR-CALCULATED-RATES-------------------------
  Median:  4.435E-003   Upper Tolerance:  3.678E-002   Aggregation Type: 1
  Mean  : +0.000E+000   Error Factor   :  8.293E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------
  Number of Failures   :      0        Number of Components  :      2
  Hours Per Component  : ------------  Demand Per Component  : --------
  Total Component Hours: ------------  Total Component Demand:       51

  Probability/Rate    : ------E----    Type         :
  Variance            : ------E----    Units        :
  Standard Deviation  : ------E----    Distribution :

                        ---Lower---    ---Upper---   -Confidence/Coverage-
  Confidence Bounds   : ------E----    ------E----             -- %
  Tolerance Bounds    : ------E----    ------E----             -- %
        Error Factor  : ------E----       Sided                -- %

--------------------------------------------------------------------------
Component          1: 600 VAC - 8.24 kVAC (voltage range)
Applications       2:
                   3:
--------------------------------------------------------------------------
                Origin                       Record Type
Failure Data :   PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -
Exposure Data:   PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -

Data Collection Period:  83 through 84 (YY through YY)

Include Circuit? : Y         Originating Facilities : RSS1-   -   -
Nuclear Origin?  : Y         Failure Degree    :
Bayesian Update? : N         Failure Severity : C
IRADAP Suitable? : Y         Include System?  : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y     Subsys. train : desig: A, B

------------------------- REFERENCE INFORMATION --------------------------
  Document Number : 13386        Detail Reference : PG. A-8

------------------------- ADDITIONAL COMMENTS ----------------------------
OTHR = survey of utilities; includes tests; a "demand" is the required
load-run duration (generally = > 1 hr)
--------------------------------------------------------------------------
```

```
          ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

      Component: Generator, with Diesel Engine Driver
         Design: Generator
   Normal State: Normally Standby
   Failure Mode: Fails to Run                          Data Record Number:  19

 ------------------------NUCLARR-CALCULATED-RATES--------------------------------
     Median:  2.708E-002  Upper Tolerance:  6.747E-002  Aggregation Type: 1
     Mean  :  2.500E-002  Error Factor    :  2.491E+000

 ----------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------------
     Number of Failures   :       2       Number of Components  :     1
     Hours Per Component  : ------------  Demand Per Component  : --------
     Total Component Hours: ------------  Total Component Demand:      80

     Probability/Rate   : ------E----     Type         :
     Variance           : ------E----     Units        :
     Standard Deviation : ------E----     Distribution :

                          ----Lower----   ----Upper----  -Confidence/Coverage-
     Confidence Bounds  : ------E----     ------E----              -- %
     Tolerance Bounds   : ------E----     ------E----              -- %
           Error Factor : ------E----         Sided                -- %

 --------------------------------------------------------------------------------
   Component          1: 600 VAC - 8.24 kVAC (voltage range)
   Applications       2:
                      3:
 --------------------------------------------------------------------------------
                   Origin                           Record Type
   Failure Data :   PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -
   Exposure Data:   PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -

   Data Collection Period:  83 through 85 (YY through YY)

   Include Circuit? : Y         Originating Facilities : QAD2-    -    -
   Nuclear Origin?  : Y         Failure Degree    :
   Bayesian Update? : N         Failure Severity : C
   IRADAP Suitable? : Y         Include System?  : I  Systems : EK-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : Y     Subsys. train : desig: 2
 ------------------------ REFERENCE INFORMATION ---------------------------------
     Document Number : 13386        Detail Reference : PG. A-8
 ------------------------- ADDITIONAL COMMENTS ----------------------------------
   OTHR = survey of utilities; includes tests; a "demand" is the required
   load-run duration (generally = > 1 hr)
 --------------------------------------------------------------------------------
```

```
       ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run                        Data Record Number:  20

-----------------------NUCLARR-CALCULATED-RATES------------------------
  Median:  1.487E-002  Upper Tolerance:  3.739E-002  Aggregation Type: 1
  Mean  :  1.370E-002  Error Factor   :  2.515E+000

------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------
  Number of Failures   :      2        Number of Components  :      1
  Hours Per Component  : ------------  Demand Per Component  : --------
  Total Component Hours: ------------  Total Component Demand:    146

  Probability/Rate   : ------E----     Type         :
  Variance           : ------E----     Units        :
  Standard Deviation : ------E----     Distribution :

                       ----Lower----  ----Upper----  -Confidence/Coverage-
  Confidence Bounds  : ------E----    ------E----              -- %
  Tolerance Bounds   : ------E----    ------E----              -- %
        Error Factor : ------E----       Sided                 -- %

-----------------------------------------------------------------------
Component          1: 600 VAC - 8.24 kVAC (voltage range)
Applications       2:
                   3:
-----------------------------------------------------------------------
                 Origin                  Record Type
Failure Data :    PLNT     TSTR-ADLG-OTHR-   -    -    -    -    -    -
Exposure Data:    PLNT     TSTR-ADLG-OTHR-   -    -    -    -    -    -

Data Collection Period:  83 through 85 (YY through YY)

Include Circuit? : Y         Originating Facilities : QAD -    -    -
Nuclear Origin?  : Y         Failure Degree    :
Bayesian Update? : N         Failure Severity : C
IRADAP Suitable? : Y         Include System?  : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y     Subsys. train : desig: 1/2

-------------------------- REFERENCE INFORMATION ----------------------
   Document Number : 13386       Detail Reference : PG. A-8

--------------------------- ADDITIONAL COMMENTS -----------------------
OTHR = survey of utilities; includes tests; a "demand" is the required
load-run duration (generally = > 1 hr)
-----------------------------------------------------------------------
```

```
                ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Run                             Data Record Number:  21

 ---------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  2.235E-002   Upper Tolerance:  5.589E-002   Aggregation Type: 1
    Mean  :  2.062E-002   Error Factor   :  2.500E+000

 ------------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
    Number of Failures     :       2            Number of Components  :      1
    Hours Per Component    : ------------       Demand Per Component  : --------
    Total Component Hours: ------------         Total Component Demand:       97

    Probability/Rate    : ------E----           Type         :
    Variance            : ------E----           Units        :
    Standard Deviation : ------E----            Distribution :

                         ----Lower----     ----Upper----   -Confidence/Coverage-
    Confidence Bounds  : ------E----       ------E----              -- %
    Tolerance Bounds   : ------E----       ------E----              -- %
          Error Factor : ------E----          Sided                 -- %

 -------------------------------------------------------------------------------
  Component            1: 600 VAC - 8.24 kVAC (voltage range)
  Applications         2:
                       3:
 -------------------------------------------------------------------------------
                 Origin                            Record Type
  Failure Data :  PLNT        TSTR-ADLG-OTHR-   -    -    -    -    -    -
  Exposure Data:  PLNT        TSTR-ADLG-OTHR-   -    -    -    -    -    -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y          Originating Facilities : QAD1-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : Y          Include System?   : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y     Subsys. train : desig: 1

 -------------------------- REFERENCE INFORMATION ------------------------------
    Document Number : 13386        Detail Reference : PG. A-8

 --------------------------- ADDITIONAL COMMENTS -------------------------------
  OTHR = survey of utilities; includes tests; a "demand" is the required
  load-run duration (generally = > 1 hr)
 -------------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

    Component: Generator, with Diesel Engine Driver
       Design: Generator
 Normal State: Normally Standby
 Failure Mode: Fails to Run                            Data Record Number:  22

----------------------------NUCLARR-CALCULATED-RATES----------------------------
  Median:  4.923E-003  Upper Tolerance:  1.617E-002  Aggregation Type: 1
  Mean  :  4.167E-003  Error Factor   :  3.284E+000

-------------------------REFERENCE-RAM-and-PROBABILITY-DATA---------------------
  Number of Failures   :       1         Number of Components  :       2
  Hours Per Component  : ------------    Demand Per Component  : --------
  Total Component Hours: ------------    Total Component Demand:      240

  Probability/Rate     : ------E----     Type         :
  Variance             : ------E----     Units        :
  Standard Deviation   : ------E----     Distribution :

                         ----Lower----   ----Upper----   -Confidence/Coverage-
  Confidence Bounds    : ------E----     ------E----               -- %
  Tolerance Bounds     : ------E----     ------E----               -- %
        Error Factor   : ------E----        Sided                  -- %

--------------------------------------------------------------------------------
Component          1: 600 VAC - 8.24 kVAC (voltage range)
Applications       2:
                   3:
--------------------------------------------------------------------------------
                 Origin                       Record Type
Failure Data :   PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -
Exposure Data:   PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -

Data Collection Period:  83 through 85 (YY through YY)

Include Circuit? : Y         Originating Facilities : PPS1-    -    -
Nuclear Origin?  : Y         Failure Degree    :
Bayesian Update? : N         Failure Severity : C
IRADAP Suitable? : Y         Include System?  : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y     Subsys. train : desig: A, B

---------------------------- REFERENCE INFORMATION -----------------------------
   Document Number : 13386       Detail Reference : PG. A-8

---------------------------- ADDITIONAL COMMENTS -------------------------------
OTHR = survey of utilities; includes tests; a "demand" is the required
load-run duration (generally = > 1 hr)
--------------------------------------------------------------------------------
```

```
         ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Run                      Data Record Number:  23

 -------------------------NUCLARR-CALCULATED-RATES--------------------------
    Median:  4.919E-003  Upper Tolerance:  9.965E-003  Aggregation Type: 1
    Mean  :  4.717E-003  Error Factor   :  2.026E+000

 ----------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------
    Number of Failures    :      4        Number of Components  :      4
    Hours Per Component   : ------------  Demand Per Component  : --------
    Total Component Hours: ------------   Total Component Demand:      848

    Probability/Rate    : ------E----     Type         :
    Variance            : ------E----     Units        :
    Standard Deviation  : ------E----     Distribution :

                          ----Lower----   ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----     ------E----               -- %
    Tolerance Bounds    : ------E----     ------E----               -- %
          Error Factor  : ------E----        Sided                  -- %

 ---------------------------------------------------------------------------
  Component            1: 600 VAC - 8.24 kVAC (voltage range)
  Applications         2:
                       3:
 ---------------------------------------------------------------------------
                Origin                   Record Type
  Failure Data :  PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -
  Exposure Data:  PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y        Originating Facilities : PBS -    -    -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : N        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y    Subsys. train : desig: E1, E2, E3, E4
 --------------------------- REFERENCE INFORMATION --------------------------
    Document Number : 13386      Detail Reference : PG. A-7
 ---------------------------- ADDITIONAL COMMENTS ---------------------------
  OTHR = survey of utilities; includes tests; a "demand" is the required
  load-run duration (generally = > 1hr)
 ---------------------------------------------------------------------------
```

```
   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run                            Data Record Number:  24

-------------------------NUCLARR-CALCULATED-RATES------------------------------
  Median:  8.117E-002  Upper Tolerance:  1.372E-001   Aggregation Type: 1
  Mean  :  7.955E-002  Error Factor   :  1.691E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
  Number of Failures   :      7        Number of Components   :      2
  Hours Per Component  : ------------  Demand Per Component   : --------
  Total Component Hours: ------------  Total Component Demand:      88

  Probability/Rate    : ------E----    Type         :
  Variance            : ------E----    Units        :
  Standard Deviation  : ------E----    Distribution :

                       ----Lower----   ----Upper----   -Confidence/Coverage-
  Confidence Bounds   : ------E----    ------E----               -- %
  Tolerance Bounds    : ------E----    ------E----               -- %
        Error Factor  : ------E----       Sided                  -- %

-------------------------------------------------------------------------------
Component          1: 600 VAC - 8.24 kVAC (voltage range)
Applications       2:
                   3:
-------------------------------------------------------------------------------
                 Origin                      Record Type
Failure Data :    PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -
Exposure Data:    PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -

Data Collection Period:  83 through 85 (YY through YY)

Include Circuit? : Y         Originating Facilities : PAL1-    -    -
Nuclear Origin?  : Y         Failure Degree    :
Bayesian Update? : N         Failure Severity : C
IRADAP Suitable? : Y         Include System?   : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y     Subsys. train : desig: 1-1, 1-2

---------------------------- REFERENCE INFORMATION ----------------------------
  Document Number : 13386        Detail Reference : PG. A-7

----------------------------- ADDITIONAL COMMENTS -----------------------------
OTHR = survey of utilities; includes tests; a "demand" is the required
load-run duration (generally = > 1 hr)

-------------------------------------------------------------------------------
```

```
            ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

      Component: Generator, with Diesel Engine Driver
         Design: Generator
   Normal State: Normally Standby
   Failure Mode: Fails to Run                        Data Record Number:  25

 ------------------------NUCLARR-CALCULATED-RATES-------------------------
     Median:  1.337E-002  Upper Tolerance:  2.940E-002   Aggregation Type: 1
     Mean  :  1.266E-002  Error Factor    :  2.199E+000

 --------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------
     Number of Failures    :      3          Number of Components  :      2
     Hours Per Component   : ------------    Demand Per Component  : --------
     Total Component Hours: ------------     Total Component Demand:     237

     Probability/Rate    : ------E----       Type         :
     Variance            : ------E----       Units        :
     Standard Deviation  : ------E----       Distribution :

                          ----Lower----    ----Upper----   -Confidence/Coverage-
     Confidence Bounds   : ------E----     ------E----               -- %
     Tolerance Bounds    : ------E----     ------E----               -- %
           Error Factor  : ------E----        Sided                  -- %

 -------------------------------------------------------------------------
   Component             1: 600 VAC - 8.24 kVAC (voltage range)
   Applications          2:
                         3:
 -------------------------------------------------------------------------
                   Origin                          Record Type
   Failure Data :   PLNT       TSTR-ADLG-OTHR-    -   -   -   -   -   -
   Exposure Data:   PLNT       TSTR-ADLG-OTHR-    -   -   -   -   -   -

   Data Collection Period:  83 through 85 (YY through YY)

   Include Circuit? : Y       Originating Facilities : OCP1-    -    -
   Nuclear Origin?  : Y       Failure Degree    :
   Bayesian Update? : N       Failure Severity : C
   IRADAP Suitable? : Y       Include System?  : I  Systems : EK-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : Y    Subsys. train : desig: 1, 2

 -------------------------- REFERENCE INFORMATION ------------------------
     Document Number : 13386        Detail Reference : PG. A-7

 --------------------------- ADDITIONAL COMMENTS -------------------------
   OTHR = survey of utilities; includes tests; a "demand" is the required
   load-run duration (generally - > 1 hr)
 -------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

```
     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Run                          Data Record Number:  26

--------------------------NUCLARR-CALCULATED-RATES------------------------------
   Median:  2.201E-002  Upper Tolerance:  3.953E-002  Aggregation Type: 1
   Mean  :  2.143E-002  Error Factor   :  1.796E+000

------------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
   Number of Failures     :      6        Number of Components  :      2
   Hours Per Component    : ------------  Demand Per Component  : --------
   Total Component Hours: ------------    Total Component Demand:     280

   Probability/Rate   : ------E----       Type          :
   Variance           : ------E----       Units         :
   Standard Deviation : ------E----       Distribution  :

                        ----Lower----     ----Upper----   -Confidence/Coverage-
   Confidence Bounds  : ------E----       ------E----              -- %
   Tolerance Bounds   : ------E----       ------E----              -- %
         Error Factor : ------E----          Sided                 -- %

--------------------------------------------------------------------------------
  Component           1: 600 VAC - 8.24 kVAC (voltage range)
  Applications        2:
                      3:
--------------------------------------------------------------------------------
                  Origin                            Record Type
  Failure Data :   PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -
  Exposure Data:   PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y         Originating Facilities : NAS2-    -    -
  Nuclear Origin?  : Y         Failure Degree     :
  Bayesian Update? : N         Failure Severity : C
  IRADAP Suitable? : Y         Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y      Subsys. train : desig: 2H, 2J

-------------------------- REFERENCE INFORMATION -------------------------------
    Document Number : 13386       Detail Reference : PG. A-7

--------------------------- ADDITIONAL COMMENTS --------------------------------
  OTHR =  survey of utilities; includes tests; a "demand" is the required
  load-run duration (generally = > 1 hr)
--------------------------------------------------------------------------------
```

```
           ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

      Component: Generator, with Diesel Engine Driver
         Design: Generator
   Normal State: Normally Standby
   Failure Mode: Fails to Run                       Data Record Number:  27

 ---------------------------NUCLARR-CALCULATED-RATES-------------------------
     Median:  6.416E-003   Upper Tolerance:  2.103E-002   Aggregation Type: 1
     Mean  :  5.435E-003   Error Factor   :  3.278E+000

 -----------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------
     Number of Failures   :      1        Number of Components   :      2
     Hours Per Component  : ------------  Demand Per Component   : --------
     Total Component Hours: ------------  Total Component Demand:     184

     Probability/Rate    : ------E----    Type         :
     Variance            : ------E----    Units        :
     Standard Deviation  : ------E----    Distribution :

                           ---Lower---    ---Upper---   -Confidence/Coverage-
     Confidence Bounds   : ------E----    ------E----             -- %
     Tolerance Bounds    : ------E----    ------E----             -- %
           Error Factor  : ------E----       Sided                -- %

 ----------------------------------------------------------------------------
   Component          1: 600 VAC - 8.24 kVAC (voltage range)
   Applications       2:
                      3:
 ----------------------------------------------------------------------------
                  Origin                        Record Type
   Failure Data :  PLNT      TSTR-ADLG-OTHR-    -   -   -   -   -   -
   Exposure Data:  PLNT      TSTR-ADLG-OTHR-    -   -   -   -   -   -

   Data Collection Period:  83 through 85 (YY through YY)

   Include Circuit? : Y        Originating Facilities : NAS1-   -   -
   Nuclear Origin?  : Y        Failure Degree   :
   Bayesian Update? : N        Failure Severity : C
   IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : Y    Subsys. train : desig: 1H, 1J

 --------------------------- REFERENCE INFORMATION --------------------------
     Document Number : 13386       Detail Reference : PG. A-7

 ---------------------------- ADDITIONAL COMMENTS ---------------------------
   OTHR =  survey of utilities; includes tests; a "demand" is the required
   load-run duration (generally = > 1 hr)

 ----------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Run                           Data Record Number:  28

-----------------------------NUCLARR-CALCULATED-RATES-------------------------
    Median:  1.817E-002   Upper Tolerance:  2.280E-002   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  1.255E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
    Number of Failures     :      0         Number of Components  :      2
    Hours Per Component    : ------------   Demand Per Component  : --------
    Total Component Hours: ------------     Total Component Demand:       83

    Probability/Rate     : ------E----      Type         :
    Variance             : ------E----      Units        :
    Standard Deviation : ------E----        Distribution :

                           ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds    : ------E----      ------E----               -- %
    Tolerance Bounds     : ------E----      ------E----               -- %
          Error Factor : ------E----          Sided                   -- %

------------------------------------------------------------------------------
  Component           1: 600 VAC - 8.24 kVAC (voltage range)
  Applications        2:
                      3:
------------------------------------------------------------------------------
                   Origin                        Record Type
  Failure Data :   PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -
  Exposure Data:   PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y          Originating Facilities : NMP1-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y     Subsys. train : desig: 102, 103

------------------------------ REFERENCE INFORMATION --------------------------
    Document Number : 13386       Detail Reference : PG. A-7

------------------------------- ADDITIONAL COMMENTS ---------------------------
  OTHR = survey of utilities; includes tests; a "demand" is the required
  load-run duration (generally = > 1 hr)
------------------------------------------------------------------------------
```

```
           ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

      Component: Generator, with Diesel Engine Driver
         Design: Generator
   Normal State: Normally Standby
   Failure Mode: Fails to Run                      Data Record Number:  29

 ─────────────────────────NUCLARR-CALCULATED-RATES──────────────────────────
    Median: 3.146E-002  Upper Tolerance:  5.901E-002  Aggregation Type: 1
    Mean  : 3.049E-002  Error Factor   :  1.876E+000

 ──────────────────────REFERENCE-RAW-and-PROBABILITY-DATA────────────────────
    Number of Failures   :      5        Number of Components  :      2
    Hours Per Component  : ------------  Demand Per Component  : --------
    Total Component Hours: ------------  Total Component Demand:      164

    Probability/Rate   : ------E----     Type         :
    Variance           : ------E----     Units        :
    Standard Deviation : ------E----     Distribution :

                         ───Lower───   ───Upper───   -Confidence/Coverage-
    Confidence Bounds  : ------E----   ------E----            -- %
    Tolerance Bounds   : ------E----   ------E----            -- %
         Error Factor  : ------E----      Sided               -- %

 ────────────────────────────────────────────────────────────────────────────
   Component         1: 600 VAC - 8.24 kVAC (voltage range)
   Applications      2:
                     3:
 ────────────────────────────────────────────────────────────────────────────
                Origin                       Record Type
   Failure Data :  PLNT      TSTR-ADLG-OTHR-    -   -   -   -   -   -
   Exposure Data:  PLNT      TSTR-ADLG-OTHR-    -   -   -   -   -   -

   Data Collection Period:  85 through 85 (YY through YY)

   Include Circuit? : Y        Originating Facilities : MGS2-    -    -
   Nuclear Origin?  : Y        Failure Degree    :
   Bayesian Update? : N        Failure Severity  : C
   IRADAP Suitable? : Y        Include System?   : I  Systems : EK-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : Y    Subsys. train : desig: 2A, 2B

 ──────────────────────────── REFERENCE INFORMATION ─────────────────────────
     Document Number : 13386         Detail Reference : PG. A-7

 ──────────────────────────── ADDITIONAL COMMENTS ───────────────────────────
   OTHR = survey of utilities; includes tests; a "demand" is the required
   load-run duration (generally = > 1 hr)
 ────────────────────────────────────────────────────────────────────────────
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

```
   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run                            Data Record Number:  30

───────────────────────────NUCLARR-CALCULATED-RATES────────────────────────────
  Median:  1.374E-002   Upper Tolerance:  3.458E-002   Aggregation Type: 1
  Mean  :  1.266E-002   Error Factor   :  2.517E+000

──────────────────────REFERENCE-RAW-and-PROBABILITY-DATA───────────────────────
  Number of Failures   :        2         Number of Components  :       2
  Hours Per Component  : ------------     Demand Per Component  : --------
  Total Component Hours: ------------     Total Component Demand:      158

  Probability/Rate    : ------E----       Type         :
  Variance            : ------E----       Units        :
  Standard Deviation  : ------E----       Distribution :

                       ───Lower───    ───Upper───   -Confidence/Coverage-
  Confidence Bounds   : ------E----    ------E----             -- %
  Tolerance Bounds    : ------E----    ------E----             -- %
        Error Factor  : ------E----        Sided               -- %

───────────────────────────────────────────────────────────────────────────────
Component           1: 600 VAC - 8.24 kVAC (voltage range)
Applications        2:
                    3:
───────────────────────────────────────────────────────────────────────────────
                Origin                         Record Type
Failure Data :   PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -
Exposure Data:   PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -

Data Collection Period:  83 through 85 (YY through YY)

Include Circuit? : Y        Originating Facilities : MGS1-    -    -
Nuclear Origin?  : Y        Failure Degree    :
Bayesian Update? : N        Failure Severity : C
IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y    Subsys. train : desig: 1A, 1B

─────────────────────────── REFERENCE INFORMATION ────────────────────────────
  Document Number : 13386       Detail Reference : PG. A-6,7

──────────────────────────── ADDITIONAL COMMENTS ─────────────────────────────
OTHR = survey of utilities; includes tests; a "demand" is required
load-run duration (generally = > 1 hr)
───────────────────────────────────────────────────────────────────────────────
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Run                           Data Record Number:  31

---------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  2.005E-002   Upper Tolerance:  2.520E-002   Aggregation Type: 1
    Mean   : +0.000E+000   Error Factor    :  1.257E+000

--------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------------
    Number of Failures   :       0         Number of Components  :      2
    Hours Per Component  : ------------    Demand Per Component  : --------
    Total Component Hours: ------------    Total Component Demand:     75

    Probability/Rate    : ------E----      Type         :
    Variance            : ------E----      Units        :
    Standard Deviation  : ------E----      Distribution :

                          ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----              -- %
    Tolerance Bounds    : ------E----      ------E----              -- %
          Error Factor  : ------E----         Sided                 -- %

------------------------------------------------------------------------------
  Component           1: 600 VAC - 8.24 kVAC (voltage range)
  Applications        2:
                      3:
------------------------------------------------------------------------------
                  Origin                        Record Type
  Failure Data :   PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -
  Exposure Data:   PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y          Originating Facilities : MNP1-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y     Subsys. train : desig: 11, 12

-------------------------- REFERENCE INFORMATION -----------------------------
     Document Number : 13386        Detail Reference : PG. A-6

-------------------------- ADDITIONAL COMMENTS -------------------------------
  OTHR = survey of utilities; includes tests; a "demand" is the required
  load-run duration (generally = > 1 hr)

------------------------------------------------------------------------------
```

```
           ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run                        Data Record Number:  32

------------------------------NUCLARR-CALCULATED-RATES------------------------------
  Median:  7.732E-003  Upper Tolerance:  1.955E-002   Aggregation Type: 1
  Mean  :  7.117E-003  Error Factor   :  2.529E+000

---------------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------------
  Number of Failures    :      2           Number of Components   :      2
  Hours Per Component   : ------------     Demand Per Component   : --------
  Total Component Hours: ------------      Total Component Demand:     281

  Probability/Rate    : ------E----        Type          :
  Variance            : ------E----        Units         :
  Standard Deviation  : ------E----        Distribution  :

                         ----Lower----    ----Upper----    -Confidence/Coverage-
  Confidence Bounds   : ------E----       ------E----                 -- %
  Tolerance Bounds    : ------E----       ------E----                 -- %
        Error Factor  : ------E----          Sided                    -- %

------------------------------------------------------------------------------------
Component          1: 600 VAC - 8.24 kVAC (voltage range)
Applications       2:
                   3:
------------------------------------------------------------------------------------
                 Origin                       Record Type
Failure Data :    PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -
Exposure Data:    PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -

Data Collection Period:  83 through 85 (YY through YY)

Include Circuit? : Y         Originating Facilities : MNS2-    -    -
Nuclear Origin?  : Y         Failure Degree    :
Bayesian Update? : N         Failure Severity : C
IRADAP Suitable? : Y         Include System?  : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y    Subsys. train : desig: 12U, 13U

---------------------------- REFERENCE INFORMATION ----------------------------------
   Document Number : 13386        Detail Reference : PG. A-6

---------------------------- ADDITIONAL COMMENTS ------------------------------------
OTHR = survey of utilities; includes tests; a "demand" is the required
load-run duration (generally = > 1 hr )
------------------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run                          Data Record Number:  33

--------------------------NUCLARR-CALCULATED-RATES------------------------------
  Median:  1.073E-002  Upper Tolerance:  1.340E-002  Aggregation Type: 1
  Mean  : +0.000E+000  Error Factor   :  1.250E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
  Number of Failures   :      0         Number of Components  :      1
  Hours Per Component  : ------------   Demand Per Component  : --------
  Total Component Hours: ------------   Total Component Demand:      142

  Probability/Rate   : ------E----      Type         :
  Variance           : ------E----      Units        :
  Standard Deviation : ------E----      Distribution :

                       ---Lower---   ---Upper---   -Confidence/Coverage-
  Confidence Bounds  : ------E----   ------E----             -- %
  Tolerance Bounds   : ------E----   ------E----             -- %
        Error Factor : ------E----      Sided                -- %

--------------------------------------------------------------------------------
Component        1: 600 VAC - 8.24 kVAC (voltage range)
Applications     2:
                 3:
--------------------------------------------------------------------------------
                Origin                     Record Type
Failure Data :   PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -
Exposure Data:   PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -

Data Collection Period:  83 through 85 (YY through YY)

Include Circuit? : Y          Originating Facilities : MNS1-    -    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : N          Failure Severity : C
IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y    Subsys. train : desig: 11U

------------------------------ REFERENCE INFORMATION ---------------------------
  Document Number : 13386       Detail Reference : PG. A-6

------------------------------ ADDITIONAL COMMENTS -----------------------------
OTHR = survey of utilities; includes tests; a "demand" is the required
load-run duration ( generally = > 1 hr)

--------------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Run                           Data Record Number:  34

---------------------------NUCLARR-CALCULATED-RATES----------------------------
   Median:  1.017E-002   Upper Tolerance:  3.320E-002   Aggregation Type: 1
   Mean  :  8.621E-003   Error Factor   :  3.264E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
   Number of Failures    :       1        Number of Components  :      2
   Hours Per Component   : ------------   Demand Per Component  : --------
   Total Component Hours: ------------    Total Component Demand:      116

   Probability/Rate    : ------E----      Type         :
   Variance            : ------E----      Units        :
   Standard Deviation  : ------E----      Distribution :

                          ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds   : ------E----      ------E----              -- %
   Tolerance Bounds    : ------E----      ------E----              -- %
        Error Factor   : ------E----         Sided                 -- %

-------------------------------------------------------------------------------
 Component           1: 600 VAC - 8.24 kVAC (voltage range)
 Applications        2:
                     3:
-------------------------------------------------------------------------------
                  Origin                           Record Type
 Failure Data :   PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -
 Exposure Data:   PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -

 Data Collection Period:  83 through 85 (YY through YY)

 Include Circuit? : Y         Originating Facilities : MYP1-    -    -
 Nuclear Origin?  : Y         Failure Degree    :
 Bayesian Update? : N         Failure Severity : C
 IRADAP Suitable? : Y         Include System?   : I  Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y     Subsys. train : desig: 1A, 1B

----------------------------- REFERENCE INFORMATION ---------------------------
   Document Number : 13386         Detail Reference : PG. A-6

------------------------------ ADDITIONAL COMMENTS ----------------------------
 OTHR = survey of utilities; includes tests; a "demand" is the required
 load-run duration (generally = > 1 hr)
-------------------------------------------------------------------------------
```

```
      ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

    Component: Generator, with Diesel Engine Driver
       Design: Generator
 Normal State: Normally Standby
 Failure Mode: Fails to Run                       Data Record Number:  35

-----------------------NUCLARR-CALCULATED-RATES-------------------------
   Median:  2.463E-002  Upper Tolerance:  6.147E-002  Aggregation Type: 1
   Mean  :  2.273E-002  Error Factor   :  2.496E+000

-------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------
   Number of Failures    :      2         Number of Components  :     2
   Hours Per Component   : ------------   Demand Per Component  : --------
   Total Component Hours: ------------    Total Component Demand:    88

   Probability/Rate    : ------E----      Type         :
   Variance            : ------E----      Units        :
   Standard Deviation : ------E----       Distribution :

                         ---Lower---     ---Upper---    -Confidence/Coverage-
   Confidence Bounds  : ------E----     ------E----              -- %
   Tolerance Bounds   : ------E----     ------E----              -- %
         Error Factor : ------E----        Sided                 -- %

--  --------------------------------------------------------------------
 Component          1: 600 VAC - 8.24 kVAC (voltage range)
 Applications       2:
                    3:
-----------------------------------------------------------------------
               Origin                        Record Type
 Failure Data :  PLNT      TSTR-ADLG-OTHR-    -   -   -   -   -   -
 Exposure Data:  PLNT      TSTR-ADLG-OTHR-    -   -   -   -   -   -

 Data Collection Period:  83 through 85 (YY through YY)

 Include Circuit? : Y        Originating Facilities : KNP1-   -   -
 Nuclear Origin?  : Y        Failure Degree    :
 Bayesian Update? : N        Failure Severity : C
 IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y    Subsys. train : desig: 1A, 1B

------------------------ REFERENCE INFORMATION -------------------------
   Document Number : 13386        Detail Reference : PG. A-6

------------------------- ADDITIONAL COMMENTS --------------------------
 OTHR =  survey of utilities; includes tests; a "demand" is the required
 load-run duration (generally = > 1 hr)
------------------------------------------------------------------------
```

```
               ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Run                            Data Record Number:  36

 ----------------------------NUCLARR-CALCULATED-RATES----------------------------
    Median:  9.477E-003  Upper Tolerance:  1.183E-002  Aggregation Type: 1
    Mean  : +0.000E+000  Error Factor    :  1.249E+000

 ------------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures   :      0        Number of Components  :      3
    Hours Per Component  : ------------  Demand Per Component  : --------
    Total Component Hours: ------------  Total Component Demand:     161

    Probability/Rate   : ------E----     Type         :
    Variance           : ------E----     Units        :
    Standard Deviation : ------E----     Distribution :

                         ----Lower----   ----Upper----   -Confidence/Coverage-
    Confidence Bounds  : ------E----     ------E----                -- %
    Tolerance Bounds   : ------E----     ------E----                -- %
         Error Factor  : ------E----        Sided                   -- %

 --------------------------------------------------------------------------------
  Component         1: 250 - 599 VAC (single voltage)
  Applications      2:
                    3:
 --------------------------------------------------------------------------------
                 Origin                          Record Type
  Failure Data :  PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -
  Exposure Data:  PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y         Originating Facilities : IPS3-    -    -
  Nuclear Origin?  : Y         Failure Degree    :
  Bayesian Update? : N         Failure Severity : C
  IRADAP Suitable? : Y         Include System?   : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y     Subsys. train : desig: 31, 32, 33

 ---------------------------- REFERENCE INFORMATION ------------------------------
    Document Number : 13386       Detail Reference : PG. A-6

 ----------------------------- ADDITIONAL COMMENTS -------------------------------
  OTHR = survey of utilities; includes tests; a "demand" is the required
  load-run duration (generally = > 1 hr)

 --------------------------------------------------------------------------------
```

```
          ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Run                          Data Record Number:  37

----------------------NUCLARR-CALCULATED-RATES--------------------------------
    Median:  9.195E-003   Upper Tolerance:  1.148E-002   Aggregation Type: 1
    Mean   : +0.000E+000  Error Factor    :  1.249E+000

---------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures   :       0          Number of Components  :      3
    Hours Per Component  : ------------     Demand Per Component  : --------
    Total Component Hours: ------------     Total Component Demand:     166

    Probability/Rate    : ------E----       Type         :
    Variance            : ------E----       Units        :
    Standard Deviation  : ------E----       Distribution :

                          ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----              -- %
    Tolerance Bounds    : ------E----      ------E----              -- %
          Error Factor  : ------E----         Sided                 -- %

------------------------------------------------------------------------------
  Component             1: 250 - 599 VAC (single voltage)
  Applications          2:
                        3:
------------------------------------------------------------------------------
                   Origin                       Record Type
  Failure Data :   PLNT       TSTR-ADLG-OTHR-   -   -   -   -   -   -
  Exposure Data:   PLNT       TSTR-ADLG-OTHR-   -   -   -   -   -   -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y        Originating Facilities : IPS2-     -    -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : N        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y     Subsys. train : desig: 21, 22, 23

------------------------- REFERENCE INFORMATION ------------------------------
    Document Number : 13386        Detail Reference : PG. A-5,6

-------------------------- ADDITIONAL COMMENTS -------------------------------
  OTHR = survey of utilities; includes tests; a "demand" is the required
  load-run duration (generally = > 1 hr)

------------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

```
    Component: Generator, with Diesel Engine Driver
       Design: Generator
 Normal State: Normally Standby
 Failure Mode: Fails to Run                          Data Record Number:  38

-------------------------------NUCLARR-CALCULATED-RATES--------------------------------
   Median:  1.570E-002   Upper Tolerance:  5.093E-002   Aggregation Type: 1
   Mean  :  1.333E-002   Error Factor   :  3.243E+000

--------------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------------
   Number of Failures     :      1          Number of Components  :      3
   Hours Per Component    : ------------    Demand Per Component  : --------
   Total Component Hours: ------------      Total Component Demand:       75

   Probability/Rate     : ------E----       Type          :
   Variance             : ------E----       Units         :
   Standard Deviation : ------E----         Distribution :

                          ----Lower----     ----Upper----   -Confidence/Coverage-
   Confidence Bounds  : ------E----         ------E----             -- %
   Tolerance Bounds   : ------E----         ------E----             -- %
         Error Factor : ------E----           Sided                 -- %
---------------------------------------------------------------------------------------
 Component           1: 600 VAC - 8.24 kVAC (voltage range)
 Applications        2:
                     3:
---------------------------------------------------------------------------------------
                  Origin                       Record Type
 Failure Data :   PLNT       TSTR-ADLG-OTHR-   -   -   -   -   -   -
 Exposure Data:   PLNT       TSTR-ADLG-OTHR-   -   -   -   -   -   -

 Data Collection Period:  85 through 85 (YY through YY)

 Include Circuit? : Y          Originating Facilities : GGS1-    -    -
 Nuclear Origin?  : Y          Failure Degree    :
 Bayesian Update? : N          Failure Severity : C
 IRADAP Suitable? : Y          Include System?  : I   Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y     Subsys. train : desig: 11, 12, 13

------------------------------- REFERENCE INFORMATION ---------------------------------
   Document Number : 13386         Detail Reference : PG. A-5

-------------------------------- ADDITIONAL COMMENTS ----------------------------------
 OTHR = survey of utilities; includes tests; a "demand" is the required
 load-run duration (generally = > 1 hr)
---------------------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

```
   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run                            Data Record Number:  39

-----------------------------NUCLARR-CALCULATED-RATES------------------------------
  Median:  1.499E-002   Upper Tolerance:  1.879E-002   Aggregation Type: 1
  Mean  : +0.000E+000   Error Factor   :  1.253E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------------
  Number of Failures    :       0        Number of Components  :       2
  Hours Per Component   : ------------   Demand Per Component  : --------
  Total Component Hours: ------------    Total Component Demand:      101

  Probability/Rate    : ------E----      Type         :
  Variance            : ------E----      Units        :
  Standard Deviation : ------E----       Distribution :

                        ----Lower----    ----Upper----   -Confidence/Coverage-
  Confidence Bounds   : ------E----      ------E----               -- %
  Tolerance Bounds    : ------E----      ------E----               -- %
        Error Factor : ------E----          Sided                  -- %

-----------------------------------------------------------------------------------
Component           1: 250 - 599 VAC (single voltage)
Applications        2:
                    3:
-----------------------------------------------------------------------------------
                 Origin                        Record Type
Failure Data :   PLNT       TSTR-ADLG-OTHR-   -    -    -    -    -    -
Exposure Data:   PLNT       TSTR-ADLG-OTHR-   -    -    -    -    -    -

Data Collection Period:  83 through 85 (YY through YY)

Include Circuit? : Y          Originating Facilities : REG1-    -    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : N          Failure Severity : C
IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y     Subsys. train : desig: 1A, 1B

------------------------------- REFERENCE INFORMATION -----------------------------
   Document Number : 13386        Detail Reference : PG. A-5

-------------------------------- ADDITIONAL COMMENTS ------------------------------
OTHR = survey of utilities; includes tests; a "demand" is the required
load-run duration (generally = > 1 hr)
-----------------------------------------------------------------------------------
```

```
               ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

      Component: Generator, with Diesel Engine Driver
         Design: Generator
   Normal State: Normally Standby
   Failure Mode: Fails to Run                          Data Record Number:  40

------------------------------NUCLARR-CALCULATED-RATES------------------------------
     Median:  2.851E-002  Upper Tolerance:  5.355E-002  Aggregation Type: 1
     Mean  :  2.762E-002  Error Factor   :  1.878E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
     Number of Failures   :      5         Number of Components  :     2
     Hours Per Component  : ------------   Demand Per Component  : --------
     Total Component Hours: ------------   Total Component Demand:    181

     Probability/Rate   : ------E----      Type         :
     Variance           : ------E----      Units        :
     Standard Deviation : ------E----      Distribution :

                          ----Lower----    ----Upper----   -Confidence/Coverage-
     Confidence Bounds  : ------E----      ------E----              -- %
     Tolerance Bounds   : ------E----      ------E----              -- %
          Error Factor  : ------E----         Sided                 -- %

-----------------------------------------------------------------------------------
   Component          1: Voltage level Unknown - AC
   Applications       2:
                      3:
-----------------------------------------------------------------------------------
                    Origin                          Record Type
   Failure Data :   PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -
   Exposure Data:   PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -

   Data Collection Period:  83 through 84 (YY through YY)

   Include Circuit? : Y        Originating Facilities : FSV1-    -    -
   Nuclear Origin?  : Y        Failure Degree    :
   Bayesian Update? : N        Failure Severity : C
   IRADAP Suitable? : N        Include System?  : I   Systems : EK-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : Y     Subsys. train : desig: A, B

------------------------------- REFERENCE INFORMATION -----------------------------
     Document Number : 13386       Detail Reference : PG. A-5

--------------------------------- ADDITIONAL COMMENTS -----------------------------
   OTHR = survey of utilities; includes tests; a "demand" is the required
   load-run duration (generally = > 1 hr)
-----------------------------------------------------------------------------------
```

```
          ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Run                               Data Record Number:  41

 ------------------------NUCLARR-CALCULATED-RATES-------------------------------
    Median:  6.289E-002   Upper Tolerance:  1.234E-001   Aggregation Type: 1
    Mean  :  6.061E-002   Error Factor   :  1.963E+000

 ---------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures     :     4         Number of Components  :      2
    Hours Per Component    : ------------  Demand Per Component  : --------
    Total Component Hours: ------------    Total Component Demand:      66

    Probability/Rate    : ------E----      Type          :
    Variance            : ------E----      Units         :
    Standard Deviation  : ------E----      Distribution  :

                         ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----              -- %
    Tolerance Bounds    : ------E----      ------E----              -- %
          Error Factor  : ------E----         Sided                 -- %

 -------------------------------------------------------------------------------
  Component            1: 600 VAC - 8.24 kVAC (voltage range)
  Applications         2:
                       3:
 -------------------------------------------------------------------------------
                  Origin                      Record Type
  Failure Data :   PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -
  Exposure Data:   PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y          Originating Facilities : FCS1-    -    -
  Nuclear Origin?  : Y          Failure Degree     :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y     Subsys. train : desig: 1, 2

 ----------------------------- REFERENCE INFORMATION ---------------------------
     Document Number : 13386        Detail Reference : PG. A-5

 ----------------------------- ADDITIONAL COMMENTS -----------------------------
  OTHR = survey of utilities; includes tests; a "demand" is the required
  load-run duration (generally = > 1 hr)
 -------------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run                        Data Record Number:  42

-------------------------NUCLARR-CALCULATED-RATES-------------------------
  Median:  9.305E-003  Upper Tolerance:  1.162E-002  Aggregation Type: 1
  Mean  : +0.000E+000  Error Factor   :  1.249E+000

-------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
  Number of Failures    :      0        Number of Components  :      4
  Hours Per Component   : ------------  Demand Per Component  : --------
  Total Component Hours: ------------   Total Component Demand:      164

  Probability/Rate    : ------E----     Type         :
  Variance            : ------E----     Units        :
  Standard Deviation : ------E----      Distribution :

                        ---Lower---     ---Upper---   -Confidence/Coverage-
  Confidence Bounds   : ------E----     ------E----             -- %
  Tolerance Bounds    : ------E----     ------E----             -- %
        Error Factor : ------E----        Sided                 -- %

--------------------------------------------------------------------------
Component          1: 600 VAC - 8.24 kVAC (voltage range)
Applications       2:
                   3:
--------------------------------------------------------------------------
              Origin                        Record Type
Failure Data :  PLNT      TSTR-ADLG-OTHR-    -   -   -   -   -   -
Exposure Data:  PLNT      TSTR-ADLG-OTHR-    -   -   -   -   -   -

Data Collection Period:  83 through 85 (YY through YY)

Include Circuit? : Y        Originating Facilities : JAF1-   -   -
Nuclear Origin?  : Y        Failure Degree    :
Bayesian Update? : N        Failure Severity : C
IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y    Subsys. train : desig: A, B, C, D

------------------------- REFERENCE INFORMATION --------------------------
  Document Number : 13386        Detail Reference : PG. A-4,5

------------------------- ADDITIONAL COMMENTS ----------------------------
OTHR =  survey of utilities; includes tests; a "demand" is the required
load-run duration (generally = > 1 hr)

--------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

```
   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run                          Data Record Number:  43

-----------------------------NUCLARR-CALCULATED-RATES-------------------------------
  Median:  7.500E-003  Upper Tolerance:  6.152E-002  Aggregation Type: 1
  Mean  : +0.000E+000  Error Factor   :  8.202E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
  Number of Failures    :      0         Number of Components  :      1
  Hours Per Component   : ------------   Demand Per Component  : --------
  Total Component Hours: ------------    Total Component Demand:      30

  Probability/Rate    : ------E----      Type         :
  Variance            : ------E----      Units        :
  Standard Deviation  : ------E----      Distribution :

                         ----Lower----    ----Upper----   -Confidence/Coverage-
  Confidence Bounds   : ------E----      ------E----              -- %
  Tolerance Bounds    : ------E----      ------E----              -- %
        Error Factor  : ------E----        Sided                  -- %
------------------------------------------------------------------------------------
Component           1: 600 VAC - 8.24 kVAC (voltage range)
Applications        2:
                    3:
------------------------------------------------------------------------------------
                 Origin                          Record Type
Failure Data :    PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -
Exposure Data:    PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -

Data Collection Period:  85 through 85 (YY through YY)

Include Circuit? : Y          Originating Facilities : JMF -    -    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : N          Failure Severity : C
IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y    Subsys. train : desig: 2C
---------------------------- REFERENCE INFORMATION ---------------------------------
   Document Number : 13386       Detail Reference : PG. A-4
----------------------------- ADDITIONAL COMMENTS ----------------------------------
OTHR = survey of utilities; includes tests; a "demand" is the required
load-run duration (generally = > 1 hr); rating = 4075 KW
------------------------------------------------------------------------------------
```

```
            ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Run                          Data Record Number:  44

 ---------------------------NUCLARR-CALCULATED-RATES------------------------
    Median:  1.838E-002   Upper Tolerance:  2.308E-002   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  1.255E+000

 ------------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------
    Number of Failures    :       0        Number of Components   :       1
    Hours Per Component   : ------------   Demand Per Component   : --------
    Total Component Hours: ------------    Total Component Demand:       82

    Probability/Rate    : ------E----      Type         :
    Variance            : ------E----      Units        :
    Standard Deviation : ------E----       Distribution :

                          ----Lower----   ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----     ------E----               -- %
    Tolerance Bounds    : ------E----     ------E----               -- %
          Error Factor : ------E----         Sided                  -- %

 ---------------------------------------------------------------------------
  Component          1: 600 VAC - 8.24 kVAC (voltage range)
  Applications       2:
                     3:
 ---------------------------------------------------------------------------
                Origin                         Record Type
  Failure Data :  PLNT     TSTR-ADLG-OTHR-   -   -   -   -   -   -
  Exposure Data:  PLNT     TSTR-ADLG-OTHR-   -   -   -   -   -   -

  Data Collection Period:  83 through 84 (YY through YY)

  Include Circuit? : Y          Originating Facilities : JMF -   -   -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : Y          Include System?   : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y      Subsys. train : desig: 2C

 -------------------------- REFERENCE INFORMATION --------------------------
    Document Number : 13386        Detail Reference : PG. A-4

 --------------------------- ADDITIONAL COMMENTS ---------------------------
  OTHR = survey of utilities; includes tests; a "demand" is the required
  load-run duration (generally = > 1 hr); rating = 2850 KW
 ---------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run                          Data Record Number:  45

------------------------------NUCLARR-CALCULATED-RATES------------------------------
  Median:  5.173E-003   Upper Tolerance:  1.144E-002   Aggregation Type: 1
  Mean  :  4.894E-003   Error Factor   :  2.212E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------------
  Number of Failures    :       3         Number of Components  :      4
  Hours Per Component   : ------------    Demand Per Component  : --------
  Total Component Hours: ------------     Total Component Demand:      613

  Probability/Rate    : ------E----       Type         :
  Variance            : ------E----       Units        :
  Standard Deviation  : ------E----       Distribution :

                        ----Lower----    ----Upper----   -Confidence/Coverage-
  Confidence Bounds   : ------E----      ------E----                -- %
  Tolerance Bounds    : ------E----      ------E----                -- %
        Error Factor  : ------E----        Sided                    -- %

-----------------------------------------------------------------------------------
Component          1: 600 VAC - 8.24 kVAC (voltage range)
Applications       2:
                   3:
-----------------------------------------------------------------------------------
                Origin                         Record Type
Failure Data :   PLNT        TSTR-ADLG-OTHR-    -    -    -    -    -    -
Exposure Data:   PLNT        TSTR-ADLG-OTHR-    -    -    -    -    -    -

Data Collection Period:  83 through 85 (YY through YY)

Include Circuit? : Y          Originating Facilities : JMF -    -    -
Nuclear Origin?  : Y          Failure Degree     :
Bayesian Update? : N          Failure Severity : C
IRADAP Suitable? : Y          Include System?   : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y     Subsys. train : desig: 1-2A, 1B, 1C, 2B

------------------------------ REFERENCE INFORMATION ------------------------------
   Document Number : 13386        Detail Reference : PG. A-4

------------------------------- ADDITIONAL COMMENTS -------------------------------
OTHR = survey of utilities; includes tests; a "demand" is the required
load-run duration (generally = > 1 hr)
-----------------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

Component: Generator, with Diesel Engine Driver
Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run
Data Record Number: 46

NUCLARR-CALCULATED-RATES

Median:	1.658E-002	Upper Tolerance:	5.373E-002	Aggregation Type:	1
Mean :	1.408E-002	Error Factor :	3.241E+000		

REFERENCE-RAW-and-PROBABILITY-DATA

Number of Failures :	1	Number of Components :	1
Hours Per Component :	------------	Demand Per Component :	--------
Total Component Hours:	------------	Total Component Demand:	71

Probability/Rate :	------E----	Type :	
Variance :	------E----	Units :	
Standard Deviation :	------E----	Distribution :	

	Lower	Upper	-Confidence/Coverage-
Confidence Bounds :	------E----	------E----	-- %
Tolerance Bounds :	------E----	------E----	-- %
Error Factor :	------E----	Sided	-- %

Component Applications
1: 600 VAC - 8.24 kVAC (voltage range)
2:
3:

	Origin		Record Type
Failure Data :	PLNT	TSTR-ADLG-OTHR-	- - - - - -
Exposure Data:	PLNT	TSTR-ADLG-OTHR-	- - - - - -

Data Collection Period: 83 through 85 (YY through YY)

Include Circuit? :	Y	Originating Facilities :	DRS3- - -
Nuclear Origin? :	Y	Failure Degree :	
Bayesian Update? :	N	Failure Severity :	C
IRADAP Suitable? :	Y	Include System? :	I Systems : EK- - - -
Safety Grade? :	Y		
Primary Failure? :	Y	Subsys. train : desig:	3

REFERENCE INFORMATION

Document Number : 13386 Detail Reference : PG. A-4

ADDITIONAL COMMENTS

OTHR = survey of utilities; includes tests; a "demand" is the required load-run duration (generally = > 1 hr)

```
          ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Run                          Data Record Number:  47

------------------------------NUCLARR CALCULATED RATES-------------------------
    Median:  2.777E-002   Upper Tolerance:  6.916E-002   Aggregation Type: 1
    Mean  :  2.564E-002   Error Factor    :  2.490E+000

------------------------REFERENCE RAW and PROBABILITY DATA---------------------
    Number of Failures    :       2        Number of Components  :      1
    Hours Per Component   : ------------   Demand Per Component  : --------
    Total Component Hours: ------------    Total Component Demand:      78

    Probability/Rate     : ------E----     Type         :
    Variance             : ------E----     Units        :
    Standard Deviation : ------E----       Distribution :

                           ---Lower---     ---Upper---    -Confidence/Coverage-
    Confidence Bounds    : ------E----     ------E----              -- %
    Tolerance Bounds     : ------E----     ------E----              -- %
          Error Factor : ------E----         Sided                  -- %

-------------------------------------------------------------------------------
  Component            1: 600 VAC - 8.24 kVAC (voltage range)
  Applications         2:
                       3:
-------------------------------------------------------------------------------
                 Origin                           Record Type
  Failure Data :  PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -
  Exposure Data:  PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y           Originating Facilities : DRS2-    -    -
  Nuclear Origin?  : Y           Failure Degree     :
  Bayesian Update? : N           Failure Severity : C
  IRADAP Suitable? : Y           Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y     Subsys. train : desig: 2

------------------------------- REFERENCE INFORMATION ------------------------
     Document Number : 13386        Detail Reference : PG. A-4

-------------------------------- ADDITIONAL COMMENTS --------------------------
  OTHR = survey of utilities; includes tests; a "demand" is the required
  load-run duration (generally = > 1 hr)

-----------------------------------------   ------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

Component: Generator, with Diesel Engine Driver
Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run
Data Record Number: 48

NUCLARR-CALCULATED-RATES

Median: 1.852E-002
Upper Tolerance: 4.060E-002
Aggregation Type: 1
Mean : 1.754E-002
Error Factor : 2.192E+000

REFERENCE-RAW-and-PROBABILITY-DATA

Number of Failures : 3
Number of Components : 3
Hours Per Component : ------------
Demand Per Component : --------
Total Component Hours: ------------
Total Component Demand: 171

Probability/Rate : ------E----
Type :
Variance : ------E----
Units :
Standard Deviation : ------E----
Distribution :

	Lower	Upper	Confidence/Coverage
Confidence Bounds	------E----	------E----	-- %
Tolerance Bounds	------E----	------E----	-- %
Error Factor	------E----	Sided	-- %

Component Applications
1: Voltage level Unknown - AC
2:
3:

	Origin	Record Type
Failure Data :	PLNT	TSTR-ADLG-OTHR- - - - - - -
Exposure Data:	PLNT	TSTR-ADLG-OTHR- - - - - - -

Data Collection Period: 85 through 85 (YY through YY)

Include Circuit? : Y
Nuclear Origin? : Y
Bayesian Update? : N
IRADAP Suitable? : Y
Safety Grade? : Y
Primary Failure? : Y

Originating Facilities : DCP1- - -
Failure Degree :
Failure Severity : C
Include System? : I Systems : EK- - - -
Subsys. train : desig: 1-1, 1-2, 1-3

REFERENCE INFORMATION

Document Number : 13386
Detail Reference : PG. A-4

ADDITIONAL COMMENTS

OTHR = survey of utilities; includes tests; a "demand" is the required load-run duration (generally = > 1 hr)

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run                         Data Record Number:  49

--------------------------NUCLARR-CALCULATED-RATES---------------------------
  Median:  3.923E-002  Upper Tolerance:  7.795E-002  Aggregation Type: 1
  Mean  :  3.774E-002  Error Factor    :  1.987E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
  Number of Failures   :      4        Number of Components   :      2
  Hours Per Component  : ------------  Demand Per Component   : --------
  Total Component Hours: ------------  Total Component Demand:     106

  Probability/Rate   : ------E----     Type         :
  Variance           : ------E----     Units        :
  Standard Deviation : ------E----     Distribution :

                       ----Lower----   ----Upper----  -Confidence/Coverage-
  Confidence Bounds  : ------E----     ------E----                 -- %
  Tolerance Bounds   : ------E----     ------E----                 -- %
       Error Factor  : ------E----        Sided                    -- %

----------------------------------------------------------------------------
Component         1: 600 VAC - 8.24 kVAC (voltage range)
Applications      2:
                  3:
----------------------------------------------------------------------------
                Origin                      Record Type
Failure Data :   PLNT       TSTR-ADLG-OTHR-   -   -   -   -   -   -
Exposure Data:   PLNT       TSTR-ADLG-OTHR-   -   -   -   -   -   -

Data Collection Period:  83 through 85 (YY through YY)

Include Circuit? : Y        Originating Facilities : DBS1-    -    -
Nuclear Origin?  : Y        Failure Degree    :
Bayesian Update? : N        Failure Severity  : C
IRADAP Suitable? : Y        Include System?   : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y     Subsys. train : desig: 1, 2

--------------------------- REFERENCE INFORMATION ---------------------------
  Document Number : 13386       Detail Reference : PG. A-4

---------------------------- ADDITIONAL COMMENTS ----------------------------
OTHR = survey of utilities; includes tests; a "demand" is the required
load-run duration (generally = > 1 hr)
----------------------------------------------------------------------------
```

```
           ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

      Component: Generator, with Diesel Engine Driver
         Design: Generator
   Normal State: Normally Standby
   Failure Mode: Fails to Run                              Data Record Number:  50

 ----------------------------NUCLARR-CALCULATED-RATES-----------------------------
     Median:  2.183E-002  Upper Tolerance:  4.775E-002   Aggregation Type: 1
     Mean  :  2.069E-002  Error Factor    :  2.187E+000

 ---------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------------
     Number of Failures    :      3          Number of Components   :      2
     Hours Per Component   : ------------    Demand Per Component   : --------
     Total Component Hours: ------------     Total Component Demand:      145

     Probability/Rate    : ------E----       Type         :
     Variance            : ------E----       Units        :
     Standard Deviation : ------E----        Distribution :

                          ----Lower----    ----Upper----   -Confidence/Coverage-
     Confidence Bounds   : ------E----     ------E----             -- %
     Tolerance Bounds    : ------E----     ------E----             -- %
           Error Factor : ------E----         Sided                -- %

 ---------------------------------------------------------------------------------
   Component          1: 600 VAC - 8.24 kVAC (voltage range)
   Applications       2:
                      3:
 ---------------------------------------------------------------------------------
                   Origin                         Record Type
   Failure Data :   PLNT        TSTR-ADLG-OTHR-   -    -    -    -    -    -
   Exposure Data:   PLNT        TSTR-ADLG-OTHR-   -    -    -    -    -    -

   Data Collection Period:  83 through 85 (YY through YY)

   Include Circuit? : Y         Originating Facilities : CRP3-    -    -
   Nuclear Origin?  : Y         Failure Degree    :
   Bayesian Update? : N         Failure Severity : C
   IRADAP Suitable? : Y         Include System?  : I  Systems : EK-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : Y     Subsys. train : desig: 3A, 3B

 ------------------------------ REFERENCE INFORMATION -----------------------------
     Document Number : 13386         Detail Reference : PG. A-4

 ------------------------------ ADDITIONAL COMMENTS -------------------------------
   OTHR = survey of utilities; includes tests; a "demand" is the required
   load-run duration (generally = > 1 hr)
 ---------------------------------------------------------------------------------
```

```
           ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Run                           Data Record Number:  51

------------------------------NUCLARR-CALCULATED-RATES-------------------------
    Median:  2.190E-002   Upper Tolerance:  5.479E-002   Aggregation Type: 1
    Mean  :  2.020E-002   Error Factor   :  2.501E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
    Number of Failures    :      2         Number of Components  :      2
    Hours Per Component   : ------------   Demand Per Component  : --------
    Total Component Hours: ------------    Total Component Demand:       99

    Probability/Rate    : ------E----      Type         :
    Variance            : ------E----      Units        :
    Standard Deviation  : ------E----      Distribution :

                        ----Lower----   ----Upper----  -Confidence/Coverage-
    Confidence Bounds   : ------E----     ------E----             -- %
    Tolerance Bounds    : ------E----     ------E----             -- %
          Error Factor  : ------E----       Sided                 -- %

-------------------------------------------------------------------------------
  Component           1: 600 VAC - 8.24 kVAC (voltage range)
  Applications        2:
                      3:
-------------------------------------------------------------------------------
                 Origin                      Record Type
  Failure Data :  PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -
  Exposure Data:  PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y        Originating Facilities : CPR1-    -    -
  Nuclear Origin?  : Y        Failure Degree     :
  Bayesian Update? : N        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y     Subsys. train : desig: 1, 2
------------------------------ REFERENCE INFORMATION --------------------------
     Document Number : 13386       Detail Reference : PG. A-4
------------------------------ ADDITIONAL COMMENTS ----------------------------
  OTHR = survey of utilities; includes tests; a "demand" is the required
  load-run duration (generally = > 1 hr)
-------------------------------------------------------------------------------
```

```
         ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Run                          Data Record Number:  52

  -------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  7.463E-003   Upper Tolerance:  9.315E-003   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  1.248E+000

  ---------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
    Number of Failures   :       0        Number of Components   :      2
    Hours Per Component  : ------------   Demand Per Component   : --------
    Total Component Hours: ------------   Total Component Demand:      205

    Probability/Rate   : ------E----      Type         :
    Variance           : ------E----      Units        :
    Standard Deviation : ------E----      Distribution :

                         ---Lower---      ---Upper---     -Confidence/Coverage-
    Confidence Bounds  : ------E----      ------E----              -- %
    Tolerance Bounds   : ------E----      ------E----              -- %
          Error Factor : ------E----         Sided                 -- %

  ----------------------------------------------------------------------------
  Component          1: 600 VAC - 8.24 kVAC (voltage range)
  Applications       2:
                     3:
  ----------------------------------------------------------------------------
                  Origin                        Record Type
  Failure Data :   PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -
  Exposure Data:   PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y        Originating Facilities : DCC2-     -     -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : N        Failure Severity : C
  IRADAP Suitable? : Y        Include System?   : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y     Subsys. train : desig: 2AB, 2CD

  --------------------------- REFERENCE INFORMATION --------------------------
    Document Number : 13386       Detail Reference : PG. A-3,4

  ---------------------------- ADDITIONAL COMMENTS ---------------------------
  OTHR = survey of utilities; includes tests; a "demand" is the required
  load-run duration (generally = > 1 hr)

  ----------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

```
    Component: Generator, with Diesel Engine Driver
       Design: Generator
 Normal State: Normally Standby
 Failure Mode: Fails to Run                           Data Record Number:  53

--------------------------NUCLARR-CALCULATED-RATES-----------------------------
   Median:  8.938E-003  Upper Tolerance:  2.923E-002   Aggregation Type: 1
   Mean  :  7.576E-003  Error Factor   :  3.270E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
   Number of Failures   :      1         Number of Components  :      2
   Hours Per Component  : ------------   Demand Per Component  : --------
   Total Component Hours: ------------   Total Component Demand:     132

   Probability/Rate   : ------E----      Type         :
   Variance           : ------E----      Units        :
   Standard Deviation : ------E----      Distribution :

                        ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds  : ------E----      ------E----              -- %
   Tolerance Bounds   : ------E----      ------E----              -- %
         Error Factor : ------E----         Sided                 -- %
--------------------------------------------------------------------------------
 Component           1: 600 VAC - 8.24 kVAC (voltage range)
 Applications        2:
                     3:
--------------------------------------------------------------------------------
                  Origin                        Record Type
 Failure Data :    PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -
 Exposure Data:    PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -

 Data Collection Period:  83 through 85 (YY through YY)

 Include Circuit? : Y          Originating Facilities : DCC2-    -    -
 Nuclear Origin?  : Y          Failure Degree    :
 Bayesian Update? : N          Failure Severity : C
 IRADAP Suitable? : Y          Include System?   : I  Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y    Subsys. train : desig: 1AB, 1CD
------------------------------ REFERENCE INFORMATION ---------------------------
   Document Number : 13386        Detail Reference : PG. A-3
------------------------------ ADDITIONAL COMMENTS -----------------------------
 OTHR = survey of utilities; includes tests; a "demand" is the required
 load-run duration (generally = > 1 hr)
--------------------------------------------------------------------------------
```

```
           ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

      Component: Generator, with Diesel Engine Driver
         Design: Generator
   Normal State: Normally Standby
   Failure Mode: Fails to Run                          Data Record Number:  54

----------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  8.976E-003   Upper Tolerance:  7.323E-002   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor    :  8.159E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures   :      0           Number of Components  :      2
    Hours Per Component  : ------------     Demand Per Component  : --------
    Total Component Hours: ------------     Total Component Demand:       25

    Probability/Rate   : ------E----        Type         :
    Variance           : ------E----        Units        :
    Standard Deviation : ------E----        Distribution :

                         ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds  : ------E----      ------E----              -- %
    Tolerance Bounds   : ------E----      ------E----              -- %
          Error Factor : ------E----         Sided                 -- %

--------------------------------------------------------------------------------
   Component          1: 600 VAC - 8.24 kVAC (voltage range)
   Applications       2:
                      3:
--------------------------------------------------------------------------------
                 Origin                     Record Type
   Failure Data :  PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -
   Exposure Data:  PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -

   Data Collection Period:  83 through 83 (YY through YY)

   Include Circuit? : Y         Originating Facilities : HNP1-    -    -
   Nuclear Origin?  : Y         Failure Degree    :
   Bayesian Update? : N         Failure Severity  : C
   IRADAP Suitable? : Y         Include System?   : I  Systems : EK-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : Y     Subsys. train : desig: A, B

----------------------------- REFERENCE INFORMATION ----------------------------
    Document Number : 13386        Detail Reference : PG. A-3

------------------------------ ADDITIONAL COMMENTS -----------------------------
   OTHR = survey of utilities; includes tests; a "demand" is the required
   load-run duration (generally = > 1 hr)

--------------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

```
   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run                          Data Record Number:  55

---------------------------NUCLARR-CALCULATED-RATES---------------------------
  Median:  2.685E-002   Upper Tolerance:  5.370E-002   Aggregation Type: 1
  Mean  :  2.581E-002   Error Factor   :  2.000E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
  Number of Failures    :       4         Number of Components  :      4
  Hours Per Component   : ------------    Demand Per Component  : --------
  Total Component Hours: ------------     Total Component Demand:      155

  Probability/Rate   : ------E----        Type         :
  Variance           : ------E----        Units        :
  Standard Deviation : ------E----        Distribution :

                       ---Lower---      ---Upper---   -Confidence/Coverage-
  Confidence Bounds  : ------E----      ------E----              -- %
  Tolerance Bounds   : ------E----      ------E----              -- %
        Error Factor : ------E----         Sided                 -- %

--------------------------------------------------------------------------------
Component            1: 600 VAC - 8.24 kVAC (voltage range)
Applications         2:
                     3:
--------------------------------------------------------------------------------
                 Origin                       Record Type
Failure Data :    PLNT      TSTR-ADLG-OTHR-    -   -   -   -   -   -
Exposure Data:    PLNT      TSTR-ADLG-OTHR-    -   -   -   -   -   -

Data Collection Period:  83 through 85 (YY through YY)

Include Circuit? : Y         Originating Facilities : BEP -    -    -
Nuclear Origin?  : Y         Failure Degree    :
Bayesian Update? : N         Failure Severity : C
IRADAP Suitable? : Y         Include System?   : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y     Subsys. train : desig: 1, 2, 3, 4

---------------------------- REFERENCE INFORMATION ----------------------------
   Document Number : 13386       Detail Reference : PG. A-3

---------------------------- ADDITIONAL COMMENTS ------------------------------
OTHR = survey of utilities; includes tests; a "demand" is the required
load-run duration (generally = > 1 hr)
--------------------------------------------------------------------------------
```

```
          ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Run                          Data Record Number:  56

-------------------------NUCLARR-CALCULATED-RATES-------------------------
    Median:  2.169E-002  Upper Tolerance:  5.425E-002  Aggregation Type: 1
    Mean  :  2.000E-002  Error Factor   :  2.502E+000

--------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
    Number of Failures    :      2        Number of Components   :     2
    Hours Per Component   : ------------  Demand Per Component   : --------
    Total Component Hours: ------------   Total Component Demand:      100

    Probability/Rate    : ------E----     Type         :
    Variance            : ------E----     Units        :
    Standard Deviation  : ------E----     Distribution :

                          ---Lower---     ---Upper---     -Confidence/Coverage-
    Confidence Bounds   : ------E----     ------E----              -- %
    Tolerance Bounds    : ------E----     ------E----              -- %
         Error Factor   : ------E----        Sided                 -- %

--------------------------------------------------------------------------
  Component          1: 600 VAC - 8.24 kVAC (voltage range)
  Applications       2:
                     3:
--------------------------------------------------------------------------
                  Origin                         Record Type
  Failure Data :   PLNT       TSTR-ADLG-OTHR-    -   -   -   -   -   -
  Exposure Data:   PLNT       TSTR-ADLG-OTHR-    -   -   -   -   -   -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y         Originating Facilities : BVS1-    -    -
  Nuclear Origin?  : Y         Failure Degree     :
  Bayesian Update? : N         Failure Severity : C
  IRADAP Suitable? : Y         Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y     Subsys. train : desig: 1-1, 1-2

------------------------- REFERENCE INFORMATION --------------------------
    Document Number : 13386       Detail Reference : PG. A-3

-------------------------- ADDITIONAL COMMENTS ---------------------------
  OTHR = survey of utilities; includes tests; a "demand" is the required
  load-run duration (generally = > 1 hr)
--------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run                             Data Record Number:  57

--------------------------NUCLARR-CALCULATED-RATES---------------------------
  Median:  8.196E-003   Upper Tolerance:  2.682E-002   Aggregation Type: 1
  Mean  :  6.944E-003   Error Factor   :  3.272E+000

---------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
  Number of Failures   :      1        Number of Components  :      2
  Hours Per Component  : ------------  Demand Per Component  : --------
  Total Component Hours: ------------  Total Component Demand:      144

  Probability/Rate    : ------E----    Type         :
  Variance            : ------E----    Units        :
  Standard Deviation  : ------E----    Distribution :

                        ---Lower---    ---Upper---   -Confidence/Coverage-
  Confidence Bounds   : ------E----    ------E----             -- %
  Tolerance Bounds    : ------E----    ------E----             -- %
        Error Factor  : ------E----       Sided                -- %

-----------------------------------------------------------------------------
Component           1: 600 VAC - 8.24 kVAC (voltage range)
Applications        2:
                    3:
-----------------------------------------------------------------------------
                Origin                     Record Type
Failure Data :   PLNT     TSTR-ADLG-OTHR-   -   -   -   -   -   -
Exposure Data:   PLNT     TSTR-ADLG-OTHR-   -   -   -   -   -   -

Data Collection Period:  83 through 85 (YY through YY)

Include Circuit? : Y        Originating Facilities : DAC1-   -   -
Nuclear Origin?  : Y        Failure Degree   :
Bayesian Update? : N        Failure Severity : C
IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y    Subsys. train : desig: 16-21, 16-31

------------------------- REFERENCE INFORMATION -----------------------------
  Document Number : 13386       Detail Reference : PG. A-3

--------------------------- ADDITIONAL COMMENTS -----------------------------
OTHR = survey of utilities; includes tests; a "demand" is the required
load-run duration (generally = > 1 hr)

-----------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Run                         Data Record Number:  58

---------------------------NUCLARR-CALCULATED-RATES---------------------------
   Median:  8.492E-003   Upper Tolerance:  2.776E-002   Aggregation Type: 1
   Mean  :  7.194E-003   Error Factor   :  3.270E+000

------------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
   Number of Failures    :       1         Number of Components   :      2
   Hours Per Component   : ------------    Demand Per Component   : --------
   Total Component Hours: ------------     Total Component Demand:      139

   Probability/Rate .  : ------E----       Type         :
   Variance            : ------E----       Units        :
   Standard Deviation  : ------E----       Distribution :

                         ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds   : ------E----       ------E----              -- %
   Tolerance Bounds    : ------E----       ------E----              -- %
        Error Factor   : ------E----          Sided                 -- %

------------------------------------------------------------------------------
 Component          1: 600 VAC - 8.24 kVAC (voltage range)
 Applications       2:
                    3:
------------------------------------------------------------------------------
                  Origin                        Record Type
 Failure Data :    PLNT        TSTR-ADLG-OTHR-   -   -   -   -   -   -
 Exposure Data:    PLNT        TSTR-ADLG-OTHR-   -   -   -   -   -   -

 Data Collection Period:  83 through 85 (YY through YY)

 Include Circuit? : Y          Originating Facilities : ANO1-    -    -
 Nuclear Origin?  : Y          Failure Degree    :
 Bayesian Update? : N          Failure Severity  : C
 IRADAP Suitable? : Y          Include System?   : I   Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y      Subsys. train : desig: 1A, 1B

------------------------------ REFERENCE INFORMATION ---------------------------
   Document Number : 13386         Detail Reference : PG. A-3

------------------------------ ADDITIONAL COMMENTS -----------------------------
 OTHR = survey of utilities; includes tests; a "demand" is the required
 load-run duration (generally = > 1 hr); rating = 2750 KW
------------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

      Component: Generator, with Diesel Engine Driver
         Design: Generator
   Normal State: Normally Standby
   Failure Mode: Fails to Run                        Data Record Number:  59

--------------------------NUCLARR-CALCULATED-RATES--------------------------
    Median:  1.743E-002  Upper Tolerance:  3.503E-002  Aggregation Type: 1
    Mean  :  1.674E-002  Error Factor   :  2.010E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------
    Number of Failures    :      4        Number of Components  :      1
    Hours Per Component   : ------------  Demand Per Component  : --------
    Total Component Hours: ------------   Total Component Demand:      239

    Probability/Rate   : ------E----      Type         :
    Variance           : ------E----      Units        :
    Standard Deviation : ------E----      Distribution :

                        ---Lower---     ---Upper---   -Confidence/Coverage-
    Confidence Bounds  : ------E----     ------E----              -- %
    Tolerance Bounds   : ------E----     ------E----              -- %
          Error Factor : ------E----         Sided                -- %

----------------------------------------------------------------------------
   Component          1: 600 VAC - 8.24 kVAC (voltage range)
   Applications       2:
                      3:
----------------------------------------------------------------------------
                 Origin                         Record Type
   Failure Data :  PLNT     TSTR-ADLG-OTHR-    -    -    -    -    -    -
   Exposure Data:  PLNT     TSTR-ADLG-OTHR-    -    -    -    -    -    -

   Data Collection Period:  83 through 85 (YY through YY)

   Include Circuit? : Y          Originating Facilities : ZIS -    -    -
   Nuclear Origin?  : Y          Failure Degree    :
   Bayesian Update? : N          Failure Severity : C
   IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : Y     Subsys. train : desig: 0

---------------------------- REFERENCE INFORMATION -------------------------
      Document Number : 13386       Detail Reference : PG. A-11

----------------------------- ADDITIONAL COMMENTS --------------------------
   OTHR = survey of utilities; includes tests; a "demand" is the required
   load-run duration (generally = > 1 hr)

----------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

Component: Generator, with Diesel Engine Driver
Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run
Data Record Number: 60

NUCLARR-CALCULATED-RATES

Median: 7.925E-003	Upper Tolerance: 1.748E-002	Aggregation Type: 1
Mean : 7.500E-003	Error Factor : 2.206E+000	

REFERENCE-RAW-and-PROBABILITY-DATA

Number of Failures	: 3	Number of Components	: 2
Hours Per Component	: ------------	Demand Per Component	: --------
Total Component Hours:	------------	Total Component Demand:	400
Probability/Rate	: ------E----	Type	:
Variance	: ------E----	Units	:
Standard Deviation	: ------E----	Distribution	:

	Lower	Upper	-Confidence/Coverage-
Confidence Bounds	: ------E----	------E----	-- %
Tolerance Bounds	: ------E----	------E----	-- %
Error Factor	: ------E----	Sided	-- %

Component Applications
1: 600 VAC - 8.24 kVAC (voltage range)
2:
3:

	Origin	Record Type
Failure Data :	PLNT	TSTR-ADLG-OTHR- - - - - - -
Exposure Data:	PLNT	TSTR-ADLG-OTHR- - - - - - -

Data Collection Period: 83 through 85 (YY through YY)

Include Circuit? : Y	Originating Facilities : ZIS2- - -
Nuclear Origin? : Y	Failure Degree :
Bayesian Update? : N	Failure Severity : C
IRADAP Suitable? : Y	Include System? : I Systems : EK- - - -
Safety Grade? : Y	
Primary Failure? : Y	Subsys. train : desig: 2A, 2B

REFERENCE INFORMATION

Document Number : 13386   Detail Reference : PG. A-10,11

ADDITIONAL COMMENTS

OTHR = survey of utilities; includes tests; a "demand" is the required load-run duration (generally = > 1 hr)

```
              ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

      Component: Generator, with Diesel Engine Driver
         Design: Generator
   Normal State: Normally Standby
   Failure Mode: Fails to Run                          Data Record Number:  61

------------------------------NUCLARR-CALCULATED-RATES------------------------------
    Median:  1.286E-002   Upper Tolerance:  2.592E-002   Aggregation Type: 1
    Mean  :  1.235E-002   Error Factor   :  2.015E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
    Number of Failures    :       4         Number of Components  :      2
    Hours Per Component   : ------------    Demand Per Component  : --------
    Total Component Hours: ------------     Total Component Demand:      324

    Probability/Rate    : ------E----       Type          :
    Variance            : ------E----       Units         :
    Standard Deviation  : ------E----       Distribution  :

                          ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----              -- %
    Tolerance Bounds    : ------E----      ------E----              -- %
          Error Factor  : ------E----         Sided                 -- %

-----------------------------------------------------------------------------------
  Component           1: 600 VAC - 8.24 kVAC (voltage range)
  Applications        2:
                      3:
-----------------------------------------------------------------------------------
                  Origin                          Record Type
  Failure Data :   PLNT        TSTR-ADLG-OTHR-   -   -   -   -   -   -
  Exposure Data:   PLNT        TSTR-ADLG-OTHR-   -   -   -   -   -   -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y          Originating Facilities : ZIS1-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y    Subsys. train : desig: 1A, 1B

--------------------------- REFERENCE INFORMATION ---------------------------
     Document Number : 13386        Detail Reference : PG. A-10

---------------------------- ADDITIONAL COMMENTS ----------------------------
  OTHR = survey of utilities; includes tests; a "demand" is the required
  load-run duration (generally = > 1 hr)

-----------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03
    Component: Generator, with Diesel Engine Driver
       Design: Generator
 Normal State: Normally Standby
 Failure Mode: Fails to Run                         Data Record Number:  62

 ---------------------------NUCLARR-CALCULATED-RATES---------------------------
   Median:  4.711E-003   Upper Tolerance:  3.902E-002   Aggregation Type: 1
   Mean   : +0.000E+000   Error Factor   :  8.283E+000

 -----------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
   Number of Failures   :       0         Number of Components  :       1
   Hours Per Component  : ------------    Demand Per Component  : --------
   Total Component Hours: ------------    Total Component Demand:       48

   Probability/Rate     : ------E----     Type         :
   Variance             : ------E----     Units        :
   Standard Deviation   : ------E----     Distribution :

                          ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds    : ------E----      ------E----              -- %
   Tolerance Bounds     : ------E----      ------E----              -- %
         Error Factor   : ------E----         Sided                 -- %

 -----------------------------------------------------------------------------
 Component            1: 600 VAC - 8.24 kVAC (voltage range)
 Applications         2:
                      3:
 -----------------------------------------------------------------------------
                  Origin                      Record Type
 Failure Data :    PLNT       TSTR-ADLG-OTHR-  -   -   -   -   -   -
 Exposure Data:    PLNT       TSTR-ADLG-OTHR-  -   -   -   -   -   -

 Data Collection Period:  83 through 85 (YY through YY)

 Include Circuit? : Y        Originating Facilities : LSC -    -    -
 Nuclear Origin?  : Y        Failure Degree    :
 Bayesian Update? : N        Failure Severity : C
 IRADAP Suitable? : Y        Include System?  : I   Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y     Subsys. train : desig: 0

 ---------------------------- REFERENCE INFORMATION ---------------------------
   Document Number : 13386       Detail Reference : PG. A-6

 ---------------------------- ADDITIONAL COMMENTS -----------------------------
 OTHR = survey of utilities; includes tests; a "demand" is the required
 load-run duration (generally = > 1 hr)
 -----------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run                          Data Record Number:  63

------------------------NUCLARR-CALCULATED-RATES-------------------------
  Median:  7.039E-003   Upper Tolerance:  5.781E-002   Aggregation Type: 1
  Mean  : +0.000E+000   Error Factor   :  8.213E+000

-------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
  Number of Failures    :      0        Number of Components  :       1
  Hours Per Component   : ------------  Demand Per Component  : --------
  Total Component Hours: ------------   Total Component Demand:       32

  Probability/Rate    : ------E----     Type         :
  Variance            : ------E----     Units        :
  Standard Deviation  : ------E----     Distribution :

                        ---Lower---     ---Upper---   -Confidence/Coverage-
  Confidence Bounds   : ------E----     ------E----             -- %
  Tolerance Bounds    : ------E----     ------E----             -- %
        Error Factor  : ------E----        Sided                -- %

-------------------------------------------------------------------------
Component          1: 600 VAC - 8.24 kVAC (voltage range)
Applications       2:
                   3:
-------------------------------------------------------------------------
                Origin                       Record Type
Failure Data :   PLNT       TSTR-ADLG-OTHR-   -    -    -    -    -    -
Exposure Data:   PLNT       TSTR-ADLG-OTHR-   -    -    -    -    -    -

Data Collection Period:  84 through 85 (YY through YY)

Include Circuit? : Y          Originating Facilities : LSC2-    -    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : N          Failure Severity : C
IRADAP Suitable? : Y          Include System?   : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y    Subsys. train : desig: 2B
------------------------- REFERENCE INFORMATION -------------------------
  Document Number : 13386         Detail Reference : PG. A-6
------------------------- ADDITIONAL COMMENTS ---------------------------
OTHR = survey of utilities; includes tests; a "demand" is the required
load-run duration (generally = > 1 hr)
-------------------------------------------------------------------------
```

```
            ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Run                          Data Record Number: 64

-------------------------NUCLARR-CALCULATED-RATES--------------------------
   Median: 4.811E-003  Upper Tolerance: 3.983E-002  Aggregation Type: 1
   Mean  : +0.000E+000 Error Factor   : 8.280E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------
   Number of Failures   :       0        Number of Components  :     1
   Hours Per Component  : ------------   Demand Per Component  : --------
   Total Component Hours: ------------   Total Component Demand:     47

   Probability/Rate   : ------E----      Type         :
   Variance           : ------E----      Units        :
   Standard Deviation : ------E----      Distribution :

                        ----Lower----    ----Upper----  -Confidence/Coverage-
   Confidence Bounds  : ------E----      ------E----             -- %
   Tolerance Bounds   : ------E----      ------E----             -- %
         Error Factor : ------E----          Sided               -- %

---------------------------------------------------------------------------
  Component          1: 600 VAC - 8.24 kVAC (voltage range)
  Applications       2:
                     3:
---------------------------------------------------------------------------
                   Origin                     Record Type
  Failure Data :    PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -
  Exposure Data:    PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y        Originating Facilities : LSC2-    -    -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : N        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y    Subsys. train : desig: 2A

--------------------------- REFERENCE INFORMATION -------------------------
   Document Number : 13386       Detail Reference : PG. A-6

---------------------------- ADDITIONAL COMMENTS --------------------------
  OTHR = survey of utilities; includes tests; a "demand" is the required
  load-run duration (generally = > 1 hr)
---------------------------------------------------------------------------
```

```
             ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

      Component: Generator, with Diesel Engine Driver
         Design: Generator
   Normal State: Normally Standby
   Failure Mode: Fails to Run                           Data Record Number:  65

 ---------------------------NUCLARR-CALCULATED-RATES---------------------------
     Median:  1.123E-002   Upper Tolerance:  3.661E-002   Aggregation Type: 1
     Mean  :  9.524E-003   Error Factor   :  3.261E+000

 ----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
     Number of Failures   :       1         Number of Components  :      2
     Hours Per Component  : ------------    Demand Per Component  : --------
     Total Component Hours: ------------    Total Component Demand:      105

     Probability/Rate     : ------E----     Type         :
     Variance             : ------E----     Units        :
     Standard Deviation   : ------E----     Distribution :

                            ----Lower----   ----Upper----   -Confidence/Coverage-
     Confidence Bounds    : ------E----     ------E----              -- %
     Tolerance Bounds     : ------E----     ------E----              -- %
           Error Factor   : ------E----        Sided                 -- %

 -------------------------------------------------------------------------------
   Component          1: 600 VAC - 8.24 kVAC (voltage range)
   Applications       2:
                      3:
 -------------------------------------------------------------------------------
                   Origin                         Record Type
   Failure Data :   PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -
   Exposure Data:   PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -

   Data Collection Period:  83 through 85 (YY through YY)

   Include Circuit? : Y         Originating Facilities : LSC1-    -    -
   Nuclear Origin?  : Y         Failure Degree    :
   Bayesian Update? : N         Failure Severity : C
   IRADAP Suitable? : Y         Include System?  : I   Systems : EK-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : Y     Subsys. train : desig: 1A, 1B

 ------------------------------ REFERENCE INFORMATION --------------------------
     Document Number : 13386        Detail Reference : PG. A-6

 ------------------------------ ADDITIONAL COMMENTS ----------------------------
   OTHR = survey of utilities; includes tests; a "demand" is the required
   load-run duration (generally = > 1 hr)
 -------------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run                          Data Record Number:  66

--------------------------NUCLARR-CALCULATED-RATES---------------------------
   Median:  2.644E-002  Upper Tolerance:  4.740E-002  Aggregation Type: 1
   Mean  :  2.575E-002  Error Factor   :  1.793E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
   Number of Failures    :      6       Number of Components  :      3
   Hours Per Component   : ------------ Demand Per Component  : --------
   Total Component Hours: ------------  Total Component Demand:      233

   Probability/Rate    : ------E----     Type          :
   Variance            : ------E----     Units         :
   Standard Deviation  : ------E----     Distribution  :

                         ----Lower----   ----Upper----   -Confidence/Coverage-
   Confidence Bounds   : ------E----     ------E----              -- %
   Tolerance Bounds    : ------E----     ------E----              -- %
        Error Factor   : ------E----        Sided                 -- %

-----------------------------------------------------------------------------
Component           1: 600 VAC - 8.24 kVAC (voltage range)
Applications        2:
                    3:
-----------------------------------------------------------------------------
                 Origin                          Record Type
Failure Data :   PLNT       TSTR-ADLG-OTHR-    -   -   -   -   -   -
Exposure Data:   PLNT       TSTR-ADLG-OTHR-    -   -   -   -   -   -

Data Collection Period:  83 through 85 (YY through YY)

Include Circuit? : Y          Originating Facilities : EIH2-    -    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : N          Failure Severity  : C
IRADAP Suitable? : Y          Include System?   : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y      Subsys. train : desig: 2A, 2B, 2C

--------------------------- REFERENCE INFORMATION ---------------------------
   Document Number : 13386        Detail Reference : PG. A-5

---------------------------- ADDITIONAL COMMENTS ----------------------------
OTHR = survey of utilities; includes tests; a "demand" is the required
load-run duration (generally = > 1 hr)
-----------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

Component: Generator, with Diesel Engine Driver
Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run
Data Record Number: 68

NUCLARR-CALCULATED-RATES

Median: 4.393E-003 Upper Tolerance: 1.443E-002 Aggregation Type: 1
Mean : 3.717E-003 Error Factor : 3.284E+000

REFERENCE-RAW-and-PROBABILITY-DATA

Number of Failures : 1
Number of Components : 3
Hours Per Component : ------------
Demand Per Component : --------
Total Component Hours: ------------
Total Component Demand: 269

Probability/Rate : ------E----
Variance : ------E----
Standard Deviation : ------E----
Type :
Units :
Distribution :

	Lower	Upper	-Confidence/Coverage-
Confidence Bounds :	------E----	------E----	-- %
Tolerance Bounds :	------E----	------E----	-- %
Error Factor :	------E----	Sided	-- %

Component Applications
1: 600 VAC - 8.24 kVAC (voltage range)
2:
3:

	Origin		Record Type					
Failure Data :	PLNT	TSTR-ADLG-OTHR-	-	-	-	-	-	-
Exposure Data:	·PLNT	TSTR-ADLG-OTHR-	-	-	-	-	-	-

Data Collection Period: 83 through 85 (YY through YY)

Include Circuit? : Y
Nuclear Origin? : Y
Bayesian Update? : N
IRADAP Suitable? : Y
Safety Grade? : Y
Primary Failure? : Y
Originating Facilities : EIH1- - -
Failure Degree :
Failure Severity : C
Include System? : I Systems : EK- - - -
Subsys. train : desig: 1A, 1B, 1C

REFERENCE INFORMATION

Document Number : 13386 Detail Reference : PG. A-5

ADDITIONAL COMMENTS

OTHR = survey of utilities; includes tests; a "demand" is the required load-run duration (generally = > 1 hr)

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

```
   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run                          Data Record Number:  69

-------------------------NUCLARR-CALCULATED-RATES---------------------------
  Median:  6.071E-003  Upper Tolerance:  1.537E-002  Aggregation Type: 1
  Mean  :  5.587E-003  Error Factor   :  2.532E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------
  Number of Failures   :       2          Number of Components   :      1
  Hours Per Component  : ------------     Demand Per Component   : --------
  Total Component Hours: ------------     Total Component Demand:     358

  Probability/Rate     : ------E----      Type         :
  Variance             : ------E----      Units        :
  Standard Deviation   : ------E----      Distribution :

                         ----Lower----   ----Upper----   -Confidence/Coverage-
  Confidence Bounds    : ------E----      ------E----                --  %
  Tolerance Bounds     : ------E----      ------E----                --  %
        Error Factor   : ------E----        Sided                    --  %

----------------------------------------------------------------------------
Component             1: 600 VAC - 8.24 kVAC (voltage range)
Applications          2:
                      3:
----------------------------------------------------------------------------
                 Origin                          Record Type
Failure Data :    PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -
Exposure Data:    PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -

Data Collection Period:  83 through 85 (YY through YY)

Include Circuit? : Y        Originating Facilities : CCN2-    -    -
Nuclear Origin?  : Y        Failure Degree     :
Bayesian Update? : N        Failure Severity : C
IRADAP Suitable? : Y        Include System?  : I   Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y     Subsys. train : desig: 21

-------------------------- REFERENCE INFORMATION ---------------------------
  Document Number : 13386        Detail Reference : PG. A-3

--------------------------- ADDITIONAL COMMENTS ----------------------------
OTHR = survey of utilities; includes tests; a "demand" is the required
load-run duration  (generally = > 1 hr)

----------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

    Component: Generator, with Diesel Engine Driver
       Design: Generator
 Normal State: Normally Standby
 Failure Mode: Fails to Run                           Data Record Number:  70

----------------------------NUCLARR-CALCULATED-RATES------------------------------
   Median:  7.015E-003   Upper Tolerance:  1.548E-002   Aggregation Type: 1
   Mean  :  6.637E-003   Error Factor   :  2.207E+000

------------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------------
   Number of Failures   :      3          Number of Components  :      1
   Hours Per Component  : ------------    Demand Per Component  : --------
   Total Component Hours: ------------    Total Component Demand:      452

   Probability/Rate    : ------E----      Type         :
   Variance            : ------E----      Units        :
   Standard Deviation  : ------E----      Distribution :

                        ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds   : ------E----      ------E----               -- %
   Tolerance Bounds    . ------E----      ------E----               -- %
         Error Factor  : ------E----         Sided                  -- %

----------------------------------------------------------------------------------
 Component          1: 600 VAC - 8.24 kVAC (voltage range)
 Applications       2:
                    3:
----------------------------------------------------------------------------------
                 Origin                         Record Type
 Failure Data :   PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -
 Exposure Data:   PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -

 Data Collection Period:  83 through 85 (YY through YY)

 Include Circuit? : Y          Originating Facilities : CCN -    -    -
 Nuclear Origin?  : Y          Failure Degree    :
 Bayesian Update? : N          Failure Severity : C
 IRADAP Suitable? : Y          Include System?   : I  Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y     Subsys. train : desig: 12
--------------------------------- REFERENCE INFORMATION --------------------------
    Document Number : 13386        Detail Reference : PG. A-3
---------------------------------- ADDITIONAL COMMENTS ---------------------------
 OTHR = survey of utilities; includes tests; a "demand" is the required
 load-run duration (generally = > 1 hr)
----------------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

Component: Generator, with Diesel Engine Driver
Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run
Data Record Number: 71

NUCLARR-CALCULATED-RATES

Median:	7.442E-003	Upper Tolerance:	1.882E-002	Aggregation Type:	1
Mean :	6.849E-003	Error Factor :	2.529E+000		

REFERENCE-RAW-and-PROBABILITY-DATA

Number of Failures :	2	Number of Components :	1
Hours Per Component :	------------	Demand Per Component :	--------
Total Component Hours:	------------	Total Component Demand:	292
Probability/Rate :	------E----	Type :	
Variance :	------E----	Units :	
Standard Deviation :	------E----	Distribution :	

	Lower	Upper	-Confidence/Coverage-
Confidence Bounds :	------E----	------E----	-- %
Tolerance Bounds :	------E----	------E----	-- %
Error Factor :	------E----	Sided	-- %

Component Applications
1: 600 VAC - 8.24 kVAC (voltage range)
2:
3:

	Origin	Record Type
Failure Data :	PLNT	TSTR-ADLG-OTHR- - - - - - -
Exposure Data:	PLNT	TSTR-ADLG-OTHR- - - - - - -

Data Collection Period: 83 through 85 (YY through YY)

Include Circuit? :	Y	Originating Facilities :	CCN1- - -
Nuclear Origin? :	Y	Failure Degree :	
Bayesian Update? :	N	Failure Severity :	C
IRADAP Suitable? :	Y	Include System? :	I Systems : EK- - - -
Safety Grade? :	Y		
Primary Failure? :	Y	Subsys. train : desig:	11

REFERENCE INFORMATION

Document Number : 13386 Detail Reference : PG. A-3

ADDITIONAL COMMENTS

OTHR = survey of utilities; includes tests; a "demand" is the required load-run duration (generally = > 1 hr)

```
       ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run                        Data Record Number:  72

------------------------NUCLARR-CALCULATED-RATES------------------------
  Median:  3.740E-003  Upper Tolerance:  1.230E-002   Aggregation Type: 1
  Mean  :  3.165E-003  Error Factor   :  3.289E+000

-------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------
  Number of Failures    :      1       Number of Components  :      2
  Hours Per Component   : ------------ Demand Per Component  : --------
  Total Component Hours:  ------------ Total Component Demand:    316

  Probability/Rate    : ------E----    Type         :
  Variance            : ------E----    Units        :
  Standard Deviation  : ------E----    Distribution :

                        ---Lower---   ---Upper---   -Confidence/Coverage-
  Confidence Bounds   : ------E----   ------E----              -- %
  Tolerance Bounds    : ------E----   ------E----              -- %
        Error Factor  : ------E----      Sided                 -- %

------------------------------------------------------------------------
Component         1: 600 VAC - 8.24 kVAC (voltage range)
Applications      2:
                  3:
------------------------------------------------------------------------
                 Origin                      Record Type
Failure Data :    PLNT     TSTR-ADLG-OTHR-    -   -   -   -   -   -
Exposure Data:    PLNT     TSTR-ADLG-OTHR-    -   -   -   -   -   -

Data Collection Period:  83 through 85 (YY through YY)

Include Circuit? : Y        Originating Facilities : ANO2-    -    -
Nuclear Origin?  : Y        Failure Degree   :
Bayesian Update? : N        Failure Severity : C
IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y    Subsys. train : desig: 2A, 2B

------------------------ REFERENCE INFORMATION -------------------------
  Document Number : 13386      Detail Reference : PG. A-3

------------------------- ADDITIONAL COMMENTS --------------------------
OTHR = survey of utilities; includes tests; a "demand" is the required
load-run duration (generally = > 1 hr)
------------------------------------------------------------------------
```

```
            ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/09

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Run                          Data Record Number:  73

 ---------------------------NUCLARR-CALCULATED-RATES--------------------------
   Median:  8.534E-003  Upper Tolerance:  1.066E-002  Aggregation Type: 1
   Mean  : +0.000E+000  Error Factor   :  1.249E+000

 ----------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
   Number of Failures    :       0       Number of Components   :      3
   Hours Per Component   : ------------  Demand Per Component   : --------
   Total Component Hours: ------------  Total Component Demand:      179

   Probability/Rate   : ------E----      Type         :
   Variance           : ------E----      Units        :
   Standard Deviation : ------E----      Distribution :

                        ---Lower---     ---Upper---    -Confidence/Coverage-
   Confidence Bounds  : ------E----     ------E----              -- %
   Tolerance Bounds   : ------E----     ------E----              -- %
         Error Factor : ------E----        Sided                 -- %

 ----------------------------------------------------------------------------
 Component          1: 250 - 599 VAC (single voltage)
 Applications       2:
                    3:
 ----------------------------------------------------------------------------
                   Origin                      Record Type
 Failure Data :    PLNT       TSTR-ADLG-OTHR-   -   -   -   -   -   -
 Exposure Data:    PLNT       TSTR-ADLG-OTHR-   -   -   -   -   -   -

 Data Collection Period:  83 through 85 (YY through YY)

 Include Circuit? : U       Originating Facilities : YKR1-   -   -
 Nuclear Origin?  : Y       Failure Degree    :
 Bayesian Update? : U       Failure Severity  : C
 IRADAP Suitable? : U       Include System?   : I  Systems : EK-  -  -  -
 Safety Grade?    : U
 Primary Failure? : U    Subsys. train : desig: 1,2,3
 --------------------------- REFERENCE INFORMATION ---------------------------
   Document Number : 13386        Detail Reference : PG. A-10
 ---------------------------- ADDITIONAL COMMENTS ----------------------------
 OTHR = survey of utilities; includes tests; a "demand" is the required
 load-run duration (generally = > 1 hr)
 ----------------------------------------------------------------------------
```

414

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/09

```
   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run                           Data Record Number:  74

-------------------------NUCLARR-CALCULATED-RATES-------------------------
  Median:  1.471E-002  Upper Tolerance:  1.842E-002   Aggregation Type: 1
  Mean  : +0.000E+000  Error Factor   :  1.253E+000

---------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------
  Number of Failures    :      0        Number of Components  :      1
  Hours Per Component   : ------------  Demand Per Component  : --------
  Total Component Hours: ------------   Total Component Demand:      103

  Probability/Rate    : ------E----     Type         :
  Variance            : ------E----     Units        :
  Standard Deviation  : ------E----     Distribution :

                        ----Lower----   ----Upper----  -Confidence/Coverage-
  Confidence Bounds   : ------E----     ------E----                 -- %
  Tolerance Bounds    : ------E----     ------E----                 -- %
        Error Factor  : ------E----        Sided                    -- %
--------------------------------------------------------------------------
Component          1: 600 VAC - 8.24 kVAC (voltage range)
Applications       2:
                   3:
--------------------------------------------------------------------------
                 Origin                      Record Type
Failure Data :    PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -
Exposure Data:    PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -

Data Collection Period:  83 through 85 (YY through YY)

Include Circuit? : Y          Originating Facilities : DRS -    -    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : N          Failure Severity  : C
IRADAP Suitable? : Y          Include System?   : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y    Subsys. train : desig: 2/3

------------------------- REFERENCE INFORMATION --------------------------
  Document Number : 13386       Detail Reference :

-------------------------- ADDITIONAL COMMENTS ---------------------------
OTHR = survey of utilities; includes tests; a "demand" is the required
load-run duration (generally = > 1 hr)
--------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/09

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Run                     Data Record Number:  75

---------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  6.835E-003  Upper Tolerance:  8.522E-003  Aggregation Type: 1
    Mean  : +0.000E+000  Error Factor   :  1.247E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures    :      0         Number of Components   :      2
    Hours Per Component   : ------------   Demand Per Component   : --------
    Total Component Hours: ------------    Total Component Demand:     224

    Probability/Rate    : ------E----      Type          :
    Variance            : ------E----      Units         :
    Standard Deviation  : ------E----      Distribution  :

                          ---Lower---     ---Upper---   -Confidence/Coverage-
    Confidence Bounds   : ------E----     ------E----             -- %
    Tolerance Bounds    : ------E----     ------E----             -- %
          Error Factor  : ------E----       Sided                 -- %

------------------------------------------------------------------------------
  Component          1: 600 VAC - 8.24 kVAC (voltage range)
  Applications       2:
                     3:
------------------------------------------------------------------------------
                  Origin                       Record Type
  Failure Data :   PLNT     TSTR-ADLG-OTHR-   -   -   -   -   -   -
  Exposure Data:   PLNT     TSTR-ADLG-OTHR-   -   -   -   -   -   -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y        Originating Facilities : PBH -   -   -
  Nuclear Origin?  : Y        Failure Degree   :
  Bayesian Update? : N        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y     Subsys. train : desig: 601, 602

--------------------------- REFERENCE INFORMATION ----------------------------
    Document Number : 13386      Detail Reference : PG. A-8

---------------------------- ADDITIONAL COMMENTS -----------------------------
  OTHR = survey of utilities; includes tests; a "demand" is the required
  load-run duration (generally = >1 hr)
------------------------------------------------------------------------------
```

```
         ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/09

      Component: Generator, with Diesel Engine Driver
         Design: Generator
   Normal State: Normally Standby
   Failure Mode: Fails to Run                       Data Record Number:  76

------------------------------NUCLARR-CALCULATED-RATES---------------------------
     Median:  6.824E-003   Upper Tolerance:  2.236E-002   Aggregation Type: 1
     Mean  :  5.780E-003   Error Factor   :  3.277E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
     Number of Failures    :       1        Number of Components   :      2
     Hours Per Component   : ------------   Demand Per Component   : --------
     Total Component Hours: ------------    Total Component Demand:      173

     Probability/Rate     : ------E----     Type         :
     Variance             : ------E----     Units        :
     Standard Deviation : ------E----       Distribution :

                           ----Lower----    ----Upper----   -Confidence/Coverage-
     Confidence Bounds   : ------E----      ------E----                -- %
     Tolerance Bounds    : ------E----      ------E----                -- %
           Error Factor : ------E----          Sided                   -- %

---------------------------------------------------------------------------------
   Component            1: 600 VAC - 8.24 kVAC (voltage range)
   Applications         2:
                        3:
---------------------------------------------------------------------------------
                    Origin                       Record Type
   Failure Data :    PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -
   Exposure Data:    PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -

   Data Collection Period:  83 through 85 (YY through YY)

   Include Circuit? : Y          Originating Facilities : PIN -    -    -
   Nuclear Origin?  : Y          Failure Degree    :
   Bayesian Update? : N          Failure Severity : C
   IRADAP Suitable? : Y          Include System?   : I  Systems : EK-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : Y     Subsys. train : desig: 1, 2
------------------------------- REFERENCE INFORMATION ----------------------------
      Document Number : 13386        Detail Reference : PG. A-8
-------------------------------- ADDITIONAL COMMENTS -----------------------------
   OTHR = survey of utilities; includes tests; a "demand" is the required
   load-run duration (generally = > 1 hr)
---------------------------------------------------------------------------------
```

```
          ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/09

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Run                        Data Record Number:  77

 ————————————————————————NUCLARR-CALCULATED-RATES————————————————————————
    Median:  7.765E-003   Upper Tolerance:  2.541E-002   Aggregation Type: 1
    Mean  :  6.579E-003   Error Factor   :  3.273E+000

 ——————————————————REFERENCE-RAW-and-PROBABILITY-DATA————————————————————
    Number of Failures    :       1        Number of Components  :      3
    Hours Per Component   : ------------   Demand Per Component  : --------
    Total Component Hours: ------------    Total Component Demand:     152

    Probability/Rate    : ------E----      Type         :
    Variance            : ------E----      Units        :
    Standard Deviation  : ------E----      Distribution :

                          ——Lower——      ——Upper——    -Confidence/Coverage-
    Confidence Bounds   : ------E----    ------E----             -- %
    Tolerance Bounds    : ------E----    ------E----             -- %
         Error Factor   : ------E----        Sided               -- %

 ————————————————————————————————————————————————————————————————————————
  Component           1: 600 VAC - 8.24 kVAC (voltage range)
  Applications        2:
                      3:
 ————————————————————————————————————————————————————————————————————————
                    Origin                   Record Type
  Failure Data :    PLNT       TSTR-ADLG-OTHR-   -   -   -   -   -   -
  Exposure Data:    PLNT       TSTR-ADLG-OTHR-   -   -   -   -   -   -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y         Originating Facilities : SPS -    -    -
  Nuclear Origin?  : Y         Failure Degree    :
  Bayesian Update? : N         Failure Severity : C
  IRADAP Suitable? : Y         Include System?  : I   Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y     Subsys. train : desig: 1, 2, 3

 ————————————————————————— REFERENCE INFORMATION —————————————————————————
    Document Number : 13386        Detail Reference : PG. A-9

 —————————————————————————— ADDITIONAL COMMENTS ——————————————————————————
  OTHR = survey of utilities; includes tests; a "demand" is the required
  load-run duration (generally = > 1 hr)
 ————————————————————————————————————————————————————————————————————————
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/09

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Run                       Data Record Number:  78

-----------------------NUCLARR-CALCULATED-RATES------------------------
    Median:  3.911E-003  Upper Tolerance:  4.875E-003   Aggregation Type: 1
    Mean  : +0.000E+000  Error Factor    :  1.246E+000

--------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------
    Number of Failures   :      0       Number of Components  :      2
    Hours Per Component  : ------------ Demand Per Component  : --------
    Total Component Hours: ------------ Total Component Demand:      393

    Probability/Rate    : ------E----       Type          :
    Variance            : ------E----       Units         :
    Standard Deviation  : ------E----       Distribution  :

                          ----Lower----  ----Upper----  -Confidence/Coverage-
    Confidence Bounds   : ------E----    ------E----              -- %
    Tolerance Bounds    : ------E----    ------E----              -- %
          Error Factor  : ------E----       Sided                 -- %

-----------------------------------------------------------------------
  Component         1: 600 VAC - 8.24 kVAC (voltage range)
  Applications      2:
                    3:
-----------------------------------------------------------------------
                   Origin                         Record Type
  Failure Data :    PLNT      TSTR-ADLG-OTHR-    -   -   -   -   -   -
  Exposure Data:    PLNT      TSTR-ADLG-OTHR-    -   -   -   -   -   -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y        Originating Facilities : TPS -   -   -
  Nuclear Origin?  : Y        Failure Degree   :
  Bayesian Update? : N        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y    Subsys. train : desig: A, B

----------------------- REFERENCE INFORMATION -------------------------
     Document Number : 13386        Detail Reference : PG. A-10

------------------------ ADDITIONAL COMMENTS --------------------------
  OTHR = survey of utilities; includes tests; a "demand" is the required
  load-run duration (generally = > 1 hr)
-----------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

```
  Component: Generator, with Diesel Engine Driver
     Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run                          Data Record Number:  79

--------------------------NUCLARR-CALCULATED-RATES---------------------------
  Median:  2.020E-002   Upper Tolerance:  3.400E-002   Aggregation Type: 1
  Mean  :  1.972E-002   Error Factor   :  1.683E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
  Number of Failures   :      7         Number of Components  : ------
  Hours Per Component  : ------------   Demand Per Component  : --------
  Total Component Hours:          355   Total Component Demand: --------

  Probability/Rate   :  1.970E-002      Type         : MEAN
  Variance           : ------E----      Units        : F/H
  Standard Deviation : ------E----      Distribution : GAMMA

                     ----Lower----   ----Upper----  -Confidence/Coverage-
  Confidence Bounds  :  5.000E-003     3.400E-002            90 %
  Tolerance Bounds   : ------E----    ------E----            -- %
        Error Factor : ------E----        Sided              -- %

-----------------------------------------------------------------------------
Component            1: Voltage level Unknown - AC
Applications         2:
                     3:
-----------------------------------------------------------------------------
                  Origin                  Record Type
Failure Data :    PLNT      PMLG-CRLB-SURV-LERS-DEVR-OTHR-    -    -    -
Exposure Data:    PLNT      CRLB-SURV-   -    -    -    -    -    -    -    -

Data Collection Period:  70 through 79 (YY through YY)

Include Circuit? : U         Originating Facilities : BRP1-    -    -
Nuclear Origin?  : Y         Failure Degree    :
Bayesian Update? : N         Failure Severity  : C
IRADAP Suitable? : Y         Include System?   : I   Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : U     Subsys. train :

-------------------------- REFERENCE INFORMATION ---------------------------
  Document Number : 20081        Detail Reference : III-10

--------------------------- ADDITIONAL COMMENTS -----------------------------
FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP.

-----------------------------------------------------------------------------
```

```
           ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

    Component: Generator, with Diesel Engine Driver
       Design: Generator
 Normal State: Normally Standby
 Failure Mode: Fails to Run                          Data Record Number:  80

--------------------------NUCLARR-CALCULATED-RATES--------------------------
   Median:  1.170E-003   Upper Tolerance:  3.840E-003   Aggregation Type: 1
   Mean  :  9.823E-004   Error Factor   :  3.283E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
   Number of Failures    :       1          Number of Components    : ------
   Hours Per Component   : ------------     Demand Per Component    : --------
   Total Component Hours:          1018     Total Component Demand: --------

   Probability/Rate   :  1.120E-003         Type         : MEAN
   Variance           :  1.080E-006         Units        : F/H
   Standard Deviation : ------E----         Distribution : GAMMA

                        ---Lower---    ---Upper---   -Confidence/Coverage-
   Confidence Bounds  : ------E----     3.840E-003            95 %
   Tolerance Bounds   : ------E----     ------E----           -- %
        Error Factor  : ------E----        Sided              -- %

-----------------------------------------------------------------------------
 Component           1: Voltage level Unknown - AC
 Applications        2:
                     3:
-----------------------------------------------------------------------------
                Origin                        Record Type
 Failure Data :  PLNT      UTDB-LERS-PMLG-SSLB-   -    -    -    -    -
 Exposure Data:  PLNT      DCCN-PMTR-RHLG-    -   -    -    -    -    -

 Data Collection Period:  71 through 84 (YY through YY)

 Include Circuit? : U          Originating Facilities : MNS1-    -    -
 Nuclear Origin?  : Y          Failure Degree   :
 Bayesian Update? : Y          Failure Severity : C
 IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : U     Subsys. train :

------------------------- REFERENCE INFORMATION -----------------------------
   Document Number : 21185       Detail Reference : 3.1-7,13

-------------------------- ADDITIONAL COMMENTS ------------------------------


-----------------------------------------------------------------------------
```

```
         ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run                         Data Record Number:  81

--------------------------NUCLARR-CALCULATED-RATES---------------------------
  Median:  1.353E-003  Upper Tolerance:  4.418E-003   Aggregation Type: 1
  Mean  :  1.136E-003  Error Factor   :  3.265E+000

---------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
  Number of Failures    :       1        Number of Components    : ------
  Hours Per Component   : ------------   Demand Per Component    : --------
  Total Component Hours:            880  Total Component Demand: --------

  Probability/Rate    :  1.290E-003      Type         : MEAN
  Variance            :  1.440E-006      Units        : F/H
  Standard Deviation : ------E----       Distribution : GAMMA

                        ---Lower---    ---Upper---   -Confidence/Coverage-
  Confidence Bounds  : ------E----    ------E----             -- %
  Tolerance Bounds   : ------E----    ------E----             -- %
        Error Factor : ------E----       Sided                -- %

-----------------------------------------------------------------------------
Component           1: Voltage level Unknown - AC
Applications        2:
                    3:
-----------------------------------------------------------------------------
                Origin                     Record Type
Failure Data :  PLNT      UTDB-LERS-INCD-MOPR-  -   -   -   -   -   -
Exposure Data:  PLNT      SSLB-SURV-JOBO-   -   -   -   -   -   -   -

Data Collection Period:  74 through 83 (YY through YY)

Include Circuit? : U        Originating Facilities : HNP1-    -    -
Nuclear Origin?  : Y        Failure Degree    :
Bayesian Update? : Y        Failure Severity : C
IRADAP Suitable? : Y        Include System?   : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : U    Subsys. train :
---------------------------- REFERENCE INFORMATION --------------------------
  Document Number : 20585      Detail Reference : 4.1-5,11
---------------------------- ADDITIONAL COMMENTS ----------------------------


-----------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

    Component: Generator, with Diesel Engine Driver
       Design: Generator
 Normal State: Normally Standby
 Failure Mode: Fails to Start                      Data Record Number:   1

──────────────────────────NUCLARR-CALCULATED-RATES──────────────────────────
   Median:  2.971E-003   Upper Tolerance:  3.701E-003   Aggregation Type: 1
   Mean   : +0.000E+000   Error Factor    :  1.246E+000

──────────────────────REFERENCE-RAW-and-PROBABILITY-DATA─────────────────────
   Number of Failures    :       0       Number of Components  :       3
   Hours Per Component   : ------------  Demand Per Component  : --------
   Total Component Hours: ------------   Total Component Demand:      518

   Probability/Rate    : ------E----     Type          :
   Variance            : ------E----     Units         :
   Standard Deviation : ------E----      Distribution :

                         ───Lower───    ───Upper───   -Confidence/Coverage-
   Confidence Bounds  : ------E----     ------E----              -- %
   Tolerance Bounds   : ------E----     ------E----              -- %
        Error Factor : ------E----         Sided                 -- %
────────────────────────────────────────────────────────────────────────────
 Component            1: 250 - 599 VAC (single voltage)
 Applications         2:
                      3:
────────────────────────────────────────────────────────────────────────────
                   Origin                      Record Type
 Failure Data :    PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -
 Exposure Data:    PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -

 Data Collection Period:  83 through 85 (YY through YY)

 Include Circuit? : Y          Originating Facilities : YKR1-    -    -
 Nuclear Origin?  : Y          Failure Degree    :
 Bayesian Update? : N          Failure Severity : C
 IRADAP Suitable? : Y          Include System?   : I  Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y     Subsys. train : desig: 1,2,3
───────────────────────────── REFERENCE INFORMATION ─────────────────────────
   Document Number : 13386        Detail Reference : PG. A-10
────────────────────────────── ADDITIONAL COMMENTS ──────────────────────────
 OTHR = survey of utilities; includes tests

────────────────────────────────────────────────────────────────────────────
```

```
            ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

    Component: Generator, with Diesel Engine Driver
       Design: Generator
 Normal State: Normally Standby
 Failure Mode: Fails to Start                           Data Record Number:   2

_____________________________NUCLARR-CALCULATED-RATES___________________________
   Median:  7.724E-003   Upper Tolerance:  9.636E-003   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  1.248E+000

________________________REFERENCE-RAW-and-PROBABILITY-DATA______________________
   Number of Failures   :      0          Number of Components  :      3
   Hours Per Component  : ------------    Demand Per Component  : --------
   Total Component Hours: ------------    Total Component Demand:     198

   Probability/Rate   : ------E----       Type         :
   Variance           : ------E----       Units        :
   Standard Deviation : ------E----       Distribution :

                        ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds  : ------E----      ------E----                 -- %
   Tolerance Bounds   : ------E----      ------E----                 -- %
         Error Factor : ------E----  .     Sided                     -- %

________________________________________________________________________________
 Component          1: Voltage level Unknown - AC
 Applications       2:
                    3:
________________________________________________________________________________
                 Origin                          Record Type
 Failure Data :   PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -
 Exposure Data:   PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -

 Data Collection Period:  84 through 85 (YY through YY)

 Include Circuit? : Y          Originating Facilities : WNP2-    -    -
 Nuclear Origin?  : Y          Failure Degree    :
 Bayesian Update? : N          Failure Severity  : C
 IRADAP Suitable? : Y          Include System?   : I  Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y     Subsys. train : desig: 1A,1B,1C

____________________________ REFERENCE INFORMATION _____________________________
   Document Number : 13386       Detail Reference : PG. A-10

____________________________ ADDITIONAL COMMENTS _______________________________
 OTHR =  survey of utilities; includes tests

________________________________________________________________________________
```

```
            ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                          Data Record Number:   3

----------------------------NUCLARR-CALCULATED-RATES----------------------------
    Median:  9.218E-003   Upper Tolerance:  3.013E-002   Aggregation Type: 1
    Mean  :  7.812E-003   Error Factor   :  3.268E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures    :      1        Number of Components   :      2
    Hours Per Component   : ------------  Demand Per Component   : --------
    Total Component Hours: ------------   Total Component Demand:      128

    Probability/Rate    : ------E----     Type         :
    Variance            : ------E----     Units        :
    Standard Deviation : ------E----      Distribution :

                          ---Lower---    ---Upper---   -Confidence/Coverage-
    Confidence Bounds   : ------E----    ------E----              -- %
    Tolerance Bounds    : ------E----    ------E----              -- %
          Error Factor : ------E----       Sided                  -- %

--------------------------------------------------------------------------------
  Component          1: 600 VAC - 8.24 kVAC (voltage range)
  Applications       2:
                     3:
--------------------------------------------------------------------------------
                  Origin                     Record Type
  Failure Data :   PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -
  Exposure Data:   PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y          Originating Facilities : VYS1-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y     Subsys. train : desig: A,B

------------------------------ REFERENCE INFORMATION ---------------------------
    Document Number : 13386        Detail Reference : PG. A-10

-------------------------------- ADDITIONAL COMMENTS ---------------------------
  OTHR = survey of utilities; includes tests

--------------------------------------------------------------------------------
```

```
          ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                     Data Record Number:   4

-----------------------NUCLARR-CALCULATED-RATES-------------------------
   Median:  5.091E-003  Upper Tolerance:  1.290E-002  Aggregation Type: 1
   Mean  :  4.684E-003  Error Factor   :  2.534E+000

-------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------
   Number of Failures    :      2         Number of Components  :      2
   Hours Per Component   : ------------   Demand Per Component  : --------
   Total Component Hours: ------------    Total Component Demand:    427

   Probability/Rate    : ------E----      Type         :
   Variance            : ------E----      Units        :
   Standard Deviation : ------E----       Distribution :

                       ---Lower---     ---Upper---   -Confidence/Coverage-
   Confidence Bounds  : ------E----     ------E----                 -- %
   Tolerance Bounds   : ------E----     ------E----                 -- %
         Error Factor : ------E----        Sided                    -- %

------------------------------------------------------------------------
 Component           1: 600 VAC - 8.24 kVAC (voltage range)
 Applications        2:
                     3:
------------------------------------------------------------------------
                 Origin                         Record Type
 Failure Data :   PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -
 Exposure Data:   PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -

 Data Collection Period:  83 through 85 (YY through YY)

 Include Circuit? : Y        Originating Facilities : TNP1-    -    -
 Nuclear Origin?  : Y        Failure Degree    :
 Bayesian Update? : N        Failure Severity : C
 IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y     Subsys. train : desig: EAST, WEST
------------------------------- REFERENCE INFORMATION ------------------
   Document Number : 13386       Detail Reference : PG. A-10
---------------------------------- ADDITIONAL COMMENTS -----------------
 OTHR = survey of utilities; includes tests

------------------------------------------------------------------------
```

```
         ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Start                         Data Record Number:   5

------------------------------NUCLARR-CALCULATED-RATES-----------------------------
  Median:  6.546E-003   Upper Tolerance:  8.171E-003   Aggregation Type: 1
  Mean  : +0.000E+000   Error Factor   :  1.248E+000

--------------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
  Number of Failures    :      0         Number of Components  :      2
  Hours Per Component   : ------------   Demand Per Component  : --------
  Total Component Hours: ------------    Total Component Demand:      234

  Probability/Rate   : ------E----       Type         :
  Variance           : ------E----       Units        :
  Standard Deviation : ------E----       Distribution :

                       ---Lower---     ---Upper---    -Confidence/Coverage-
  Confidence Bounds  : ------E----     ------E----                -- %
  Tolerance Bounds   : ------E----     ------E----                -- %
        Error Factor : ------E----        Sided                   -- %

-----------------------------------------------------------------------------------
Component          1: 600 VAC - 8.24 kVAC (voltage range)
Applications       2:
                   3:
-----------------------------------------------------------------------------------
                  Origin                       Record Type
Failure Data :     PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -
Exposure Data:     PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -

Data Collection Period:  83 through 85 (YY through YY)

Include Circuit? : Y          Originating Facilities : TMI1-    -    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : N          Failure Severity : C
IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y     Subsys. train : desig: 1A, 1B
------------------------------ REFERENCE INFORMATION ------------------------------
   Document Number : 13386        Detail Reference : PG. A-10
------------------------------- ADDITIONAL COMMENTS -------------------------------
OTHR =  survey of utilities; includes tests

-----------------------------------------------------------------------------------
```

```
          ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                        Data Record Number:   6

----------------------------NUCLARR-CALCULATED-RATES---------------------------
   Median:  9.836E-004   Upper Tolerance:  3.249E-003   Aggregation Type: 1
   Mean  :  8.313E-004   Error Factor   :  3.303E+000

--------------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------
   Number of Failures    :       1         Number of Components   :      4
   Hours Per Component   : ------------    Demand Per Component   : --------
   Total Component Hours: ------------     Total Component Demand:      1203

   Probability/Rate    : ------E----       Type         :
   Variance            : ------E----       Units        :
   Standard Deviation : ------E----        Distribution :

                         ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds   : ------E----      ------E----              -- %
   Tolerance Bounds    : ------E----      ------E----              -- %
         Error Factor : ------E----          Sided                 -- %

-------------------------------------------------------------------------------
  Component          1: 600 VAC - 8.24 kVAC (voltage range)
  Applications       2:
                     3:
-------------------------------------------------------------------------------
                  Origin                        Record Type
  Failure Data :  PLNT        TSTR-ADLG-OTHR-    -   -   -   -   -   -
  Exposure Data:  PLNT        TSTR-ADLG-OTHR-    -   -   -   -   -   -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y           Originating Facilities : SES -    -    -
  Nuclear Origin?  : Y           Failure Degree    :
  Bayesian Update? : N           Failure Severity : C
  IRADAP Suitable? : Y           Include System?  : I   Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y      Subsys. train : desig: A, B, C, D

------------------------------- REFERENCE INFORMATION -------------------------
     Document Number : 13386        Detail Reference : PG. A-9,10

-------------------------------- ADDITIONAL COMMENTS --------------------------
  OTHR = survey of utilities; includes tests

-------------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

Component: Generator, with Diesel Engine Driver
Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Start
Data Record Number: 7

NUCLARR-CALCULATED-RATES

Median: 6.518E-003	Upper Tolerance:	8.125E-003	Aggregation Type:	1
Mean : +0.000E+000	Error Factor :	1.247E+000		

REFERENCE-RAW-and-PROBABILITY-DATA

Number of Failures :	0	Number of Components :	2
Hours Per Component :	------------	Demand Per Component :	--------
Total Component Hours:	------------	Total Component Demand:	235

Probability/Rate :	------E----	Type :	
Variance :	------E----	Units :	
Standard Deviation :	------E----	Distribution :	

	Lower	Upper	-Confidence/Coverage-
Confidence Bounds :	------E----	------E----	-- %
Tolerance Bounds :	------E----	------E----	-- %
Error Factor :	------E----	Sided	-- %

Component Applications
1: 600 VAC - 8.24 kVAC (voltage range)
2:
3:

	Origin	Record Type
Failure Data :	PLNT	TSTR-ADLG-OTHR- - - - - - -
Exposure Data:	PLNT	TSTR-ADLG-OTHR- - - - - - -

Data Collection Period: 84 through 85 (YY through YY)

Include Circuit? : Y
Nuclear Origin? : Y
Bayesian Update? : N
IRADAP Suitable? : Y
Safety Grade? : Y
Primary Failure? : Y
Originating Facilities : VCS1- - -
Failure Degree :
Failure Severity : C
Include System? : I Systems : EK- - - -
Subsys. train : desig: A, B

REFERENCE INFORMATION

Document Number : 13386 Detail Reference : PG. A-9

ADDITIONAL COMMENTS

OTHR = survey of utilities; includes tests

```
           ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

      Component: Generator, with Diesel Engine Driver
         Design: Generator
   Normal State: Normally Standby
   Failure Mode: Fails to Start                          Data Record Number:   8

-------------------------NUCLARR-CALCULATED-RATES--------------------------------
  Median:  1.417E-002  Upper Tolerance:  1.775E-002   Aggregation Type: 1
  Mean  : +0.000E+000  Error Factor   :  1.253E+000

---------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------------
  Number of Failures    :       0         Number of Components  :       1
  Hours Per Component   : ------------    Demand Per Component  : --------
  Total Component Hours: ------------     Total Component Demand:     107

  Probability/Rate    : ------E----       Type         :
  Variance            : ------E----       Units        :
  Standard Deviation : ------E----        Distribution :

                        ----Lower----    ----Upper----    -Confidence/Coverage-
  Confidence Bounds   : ------E----      ------E----               -- %
  Tolerance Bounds    : ------E----      ------E----               -- %
        Error Factor : ------E----          Sided                  -- %

---------------------------------------------------------------------------------
 Component          1: 600 VAC - 8.24 kVAC (voltage range)
 Applications       2:
                    3:
---------------------------------------------------------------------------------
                 Origin                           Record Type
 Failure Data :   PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -
 Exposure Data:   PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -

 Data Collection Period:  84 through 85 (YY through YY)

 Include Circuit? : Y          Originating Facilities : SLS2-    -    -
 Nuclear Origin?  : Y          Failure Degree         :
 Bayesian Update? : N          Failure Severity       : C
 IRADAP Suitable? : Y          Include System?  : I   Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y     Subsys. train : desig: 2B

------------------------------ REFERENCE INFORMATION ----------------------------
   Document Number : 13386         Detail Reference : PG. A-9

------------------------------ ADDITIONAL COMMENTS ------------------------------
 OTHR = survey of utilities; includes tests; rating = 3685 KW

---------------------------------------------------------------------------------
```

```
            ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Start                          Data Record Number:   9

-------------------------NUCLARR-CALCULATED-RATES-------------------------------
  Median:  1.153E-002   Upper Tolerance:  1.441E-002   Aggregation Type: 1
  Mean   : +0.000E+000  Error Factor    :  1.250E+000

--------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------------
  Number of Failures    :      0        Number of Components   :      1
  Hours Per Component   : ------------  Demand Per Component   : --------
  Total Component Hours: ------------   Total Component Demand:       132

  Probability/Rate    : ------E----     Type         :
  Variance            : ------E----     Units        :
  Standard Deviation  : ------E----     Distribution :

                        ----Lower----   ----Upper----   -Confidence/Coverage-
  Confidence Bounds   : ------E----     ------E----                -- %
  Tolerance Bounds    : ------E----     ------E----                -- %
        Error Factor  : ------E----        Sided                   -- %

--------------------------------------------------------------------------------
Component           1: 600 VAC - 8.24 kVAC (voltage range)
Applications        2:
                    3:
--------------------------------------------------------------------------------
                 Origin                      Record Type
Failure Data :   PLNT       TSTR-ADLG-OTHR-   -   -   -   -   -   -
Exposure Data:   PLNT       TSTR-ADLG-OTHR-   -   -   -   -   -   -

Data Collection Period:  84 through 85 (YY through YY)

Include Circuit? : Y         Originating Facilities : SLS2-    -    -
Nuclear Origin?  : Y         Failure Degree    :
Bayesian Update? : N         Failure Severity : C
IRADAP Suitable? : Y         Include System?  : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y     Subsys. train : desig: 2A

--------------------------- REFERENCE INFORMATION -------------------------------
   Document Number : 13386       Detail Reference : PG. A-9

---------------------------- ADDITIONAL COMMENTS -------------------------------
OTHR = survey of utilities; includes tests; rating = 3500 KW

--------------------------------------------------------------------------------
```

```
ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

    Component: Generator, with Diesel Engine Driver
       Design: Generator
 Normal State: Normally Standby
 Failure Mode: Fails to Start                        Data Record Number:  10

--------------------------NUCLARR-CALCULATED-RATES--------------------------
   Median:  6.204E-003   Upper Tolerance:  7.744E-003   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor    :  1.248E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
   Number of Failures     :      0         Number of Components   :      2
   Hours Per Component    : ------------   Demand Per Component   : --------
   Total Component Hours: ------------     Total Component Demand:      247

   Probability/Rate   : ------E----        Type         :
   Variance           : ------E----        Units        :
   Standard Deviation : ------E----        Distribution :

                        ----Lower----   ----Upper----   -Confidence/Coverage-
   Confidence Bounds  : ------E----     ------E----              -- %
   Tolerance Bounds   : ------E----     ------E----              -- %
         Error Factor : ------E----        Sided                 -- %

----------------------------------------------------------------------------
 Component          1: 600 VAC - 8.24 kVAC (voltage range)
 Applications       2:
                    3:
----------------------------------------------------------------------------
                    Origin                    Record Type
 Failure Data :     PLNT       TSTR-ADLG-OTHR-    -   -   -   -   -   -
 Exposure Data:     PLNT       TSTR-ADLG-OTHR-    -   -   -   -   -   -

 Data Collection Period:  83 through 85 (YY through YY)

 Include Circuit? : Y         Originating Facilities : SLS1-    -    -
 Nuclear Origin?  : Y         Failure Degree    :
 Bayesian Update? : N         Failure Severity  : C
 IRADAP Suitable? : Y         Include System?   : I  Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y    Subsys. train : desig: 1A, 1B

------------------------- REFERENCE INFORMATION ----------------------------
   Document Number : 13386       Detail Reference : PG. A-9

------------------------- ADDITIONAL COMMENTS ------------------------------
 OTHR = survey of utilities; includes tests

----------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Start                       Data Record Number:  11

--------------------------NUCLARR-CALCULATED-RATES---------------------------
  Median:  3.503E-003   Upper Tolerance:  4.360E-003   Aggregation Type: 1
  Mean   : +0.000E+000  Error Factor    :  1.245E+000

---------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
  Number of Failures    :       0        Number of Components  :       2
  Hours Per Component   : ------------   Demand Per Component  : --------
  Total Component Hours: ------------    Total Component Demand:      439

  Probability/Rate   : ------E----       Type          :
  Variance           : ------E----       Units         :
  Standard Deviation : ------E----       Distribution :

                       ---Lower---     ---Upper---    -Confidence/Coverage-
  Confidence Bounds  : ------E----     ------E----              -- %
  Tolerance Bounds   : ------E----     ------E----              -- %
        Error Factor : ------E----        Sided                 -- %
-----------------------------------------------------------------------------
Component           1: 600 VAC - 8.24 kVAC (voltage range)
Applications        2:
                    3:
-----------------------------------------------------------------------------
                  Origin                       Record Type
Failure Data :    PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -
Exposure Data:    PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -

Data Collection Period:  83 through 85 (YY through YY)

Include Circuit? : Y           Originating Facilities : SNP2-    -    -
Nuclear Origin?  : Y           Failure Degree    :
Bayesian Update? : N           Failure Severity : C
IRADAP Suitable? : Y           Include System?   : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y     Subsys. train : desig: 2A-A, 2B-B
------------------------------ REFERENCE INFORMATION -------------------------
   Document Number : 13386       Detail Reference : PG. A-9
------------------------------- ADDITIONAL COMMENTS --------------------------
OTHR = survey of utilties; includes tests

-----------------------------------------------------------------------------
```

```
          ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

      Component: Generator, with Diesel Engine Driver
         Design: Generator
   Normal State: Normally Standby
   Failure Mode: Fails to Start                         Data Record Number:  12

 ----------------------------NUCLARR-CALCULATED-RATES----------------------------
     Median:  5.394E-003   Upper Tolerance:  1.366E-002   Aggregation Type: 1
     Mean  :  4.963E-003   Error Factor   :  2.533E+000

 ----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
     Number of Failures    :      2          Number of Components  :      2
     Hours Per Component   : ------------    Demand Per Component  : --------
     Total Component Hours: ------------     Total Component Demand:     403

     Probability/Rate   : ------E----        Type          :
     Variance           : ------E----        Units         :
     Standard Deviation : ------E----        Distribution :

                           ---Lower---     ---Upper---    -Confidence/Coverage-
     Confidence Bounds  : ------E----      ------E----              -- %
     Tolerance Bounds   : ------E----      ------E----              -- %
           Error Factor : ------E----         Sided                 -- %

 -------------------------------------------------------------------------------
   Component            1: 600 VAC - 8.24 kVAC (voltage range)
   Applications         2:
                        3:
 -------------------------------------------------------------------------------
                   Origin                     Record Type
   Failure Data :  PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -
   Exposure Data:  PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -

   Data Collection Period:  83 through 85 (YY through YY)

   Include Circuit? : Y         Originating Facilities : SNP1-    -    -
   Nuclear Origin?  : Y         Failure Degree    :
   Bayesian Update? : N         Failure Severity : C
   IRADAP Suitable? : Y         Include System?  : I   Systems : EK-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : Y     Subsys  train : desig: 1A-A, 1B-B

 ---------------------------- REFERENCE INFORMATION ----------------------------
     Document Number : 13386        Detail Reference : PG. A-9

 ----------------------------- ADDITIONAL COMMENTS -----------------------------
   OTHR = survey of utilities; includes tests

 -------------------------------------------------------------------------------
```

434

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Start                      Data Record Number:  13

--------------------------NUCLARR-CALCULATED-RATES---------------------------
  Median:  2.413E-002   Upper Tolerance:  3.039E-002   Aggregation Type: 1
  Mean  : +0.000E+000   Error Factor   :  1.260E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
  Number of Failures    :     0         Number of Components  :      2
  Hours Per Component   : ------------  Demand Per Component  : --------
  Total Component Hours: ------------   Total Component Demand:       62

  Probability/Rate    : ------E----     Type         :
  Variance            : ------E----     Units        :
  Standard Deviation  : ------E----     Distribution :

                       ----Lower----   ----Upper----   -Confidence/Coverage-
  Confidence Bounds   : ------E----    ------E----             -- %
  Tolerance Bounds    : ------E----    ------E----             -- %
       Error Factor   : ------E----       Sided                -- %

-----------------------------------------------------------------------------
Component          1: 600 VAC - 8.24 kVAC (voltage range)
Applications       2:
                   3:
-----------------------------------------------------------------------------
                  Origin                        Record Type
Failure Data :     PLNT      TSTR-ADLG-OTHR-    -   -   -   -   -   -
Exposure Data:     PLNT      TSTR-ADLG-OTHR-    -   -   -   -   -   -

Data Collection Period:  85 through 85 (YY through YY)

Include Circuit? : Y         Originating Facilities : SOS3-    -    -
Nuclear Origin?  : Y         Failure Degree    :
Bayesian Update? : N         Failure Severity : C
IRADAP Suitable? : Y         Include System?   : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y     Subsys. train : desig: 36002, 36003

---------------------------- REFERENCE INFORMATION --------------------------
    Document Number : 13386       Detail Reference : PG. A-9

---------------------------- ADDITIONAL COMMENTS ----------------------------
OTHR = survey of utilities; includes tests

-----------------------------------------------------------------------------
```

```
ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                         Data Record Number:  14

---------------------------NUCLARR-CALCULATED-RATES----------------------------
    Median: 2.059E-002  Upper Tolerance:  2.589E-002  Aggregation Type: 1
    Mean  : +0.000E+000 Error Factor   :  1.257E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures   :      0        Number of Components  :       2
    Hours Per Component  : ------------  Demand Per Component  : --------
    Total Component Hours: ------------  Total Component Demand:      73

    Probability/Rate    : ------E----    Type         :
    Variance            : ------E----    Units        :
    Standard Deviation  : ------E----    Distribution :

                          ---Lower---    ---Upper---    -Confidence/Coverage-
    Confidence Bounds   : ------E----    ------E----              -- %
    Tolerance Bounds    : ------E----    ------E----              -- %
          Error Factor  : ------E----       Sided                 -- %

-------------------------------------------------------------------------------
  Component           1: 600 VAC - 8.24 kVAC (voltage range)
  Applications        2:
                      3:
-------------------------------------------------------------------------------
                   Origin                         Record Type
  Failure Data :    PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -
  Exposure Data:    PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -

  Data Collection Period:  84 through 85 (YY through YY)

  Include Circuit? : Y        Originating Facilities : SOS2-    -    -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : N        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y    Subsys. train : desig: 26002, 26003

---------------------------- REFERENCE INFORMATION ----------------------------
    Document Number : 13386       Detail Reference : PG. A-9

----------------------------- ADDITIONAL COMMENTS -----------------------------
  OTHR = survey of utilities; includes tests

-------------------------------------------------------------------------------
```

```
            ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

      Component: Generator, with Diesel Engine Driver
         Design: Generator
   Normal State: Normally Standby
   Failure Mode: Fails to Start                         Data Record Number:  15

-----------------------NUCLARR-CALCULATED-RATES------------------------------
    Median:  3.936E-003   Upper Tolerance:  8.720E-003   Aggregation Type: 1
    Mean  :  3.722E-003   Error Factor   :  2.216E+000

------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
    Number of Failures    :      3         Number of Components  :      3
    Hours Per Component   : ------------   Demand Per Component  : --------
    Total Component Hours: ------------    Total Component Demand:     806

    Probability/Rate    : ------E----      Type         :
    Variance            : ------E----      Units        :
    Standard Deviation  : ------E----      Distribution :

                          ---Lower---    ---Upper---   -Confidence/Coverage-
    Confidence Bounds   : ------E----    ------E----              -- %
    Tolerance Bounds    : ------E----    ------E----              -- %
          Error Factor  : ------E----       Sided                 -- %
-----------------------------------------------------------------------------
   Component         1: 600 VAC - 8.24 kVAC (voltage range)
   Applications      2:
                     3:
-----------------------------------------------------------------------------
                Origin                          Record Type
   Failure Data :  PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -
   Exposure Data:  PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -

   Data Collection Period:  83 through 85 (YY through YY)

   Include Circuit? : Y        Originating Facilities : SGS2-    -    -
   Nuclear Origin?  : Y        Failure Degree     :
   Bayesian Update? : N        Failure Severity : C
   IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : Y     Subsys. train : desig: 2A, 2B, 2C

------------------------- REFERENCE INFORMATION -----------------------------
     Document Number : 13386       Detail Reference : PG. A-8,9

--------------------------- ADDITIONAL COMMENTS -----------------------------
   OTHR = survey of utilities; includes tests

-----------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                         Data Record Number:  16

--------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  3.086E-003   Upper Tolerance:  1.015E-002   Aggregation Type: 1
    Mean  :  2.611E-003   Error Factor   :  3.290E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
    Number of Failures    :       1         Number of Components  :      3
    Hours Per Component   : ------------    Demand Per Component  : --------
    Total Component Hours: ------------     Total Component Demand:    383

    Probability/Rate    : ------E----       Type         :
    Variance            : ------E----       Units        :
    Standard Deviation  : ------E----       Distribution :

                          ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----              -- %
    Tolerance Bounds    : ------E----      ------E----              -- %
          Error Factor  : ------E----          Sided                -- %

-----------------------------------------------------------------------------
  Component            1: 600 VAC - 8.24 kVAC (voltage range)
  Applications         2:
                       3:
-----------------------------------------------------------------------------
                   Origin                         Record Type
  Failure Data :   PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -
  Exposure Data:   PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y        Originating Facilities : SGS1-    -    -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : N        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I   Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y      Subsys. train : desig: 1A, 1B, 1C

------------------------------ REFERENCE INFORMATION ------------------------
    Document Number : 13386        Detail Reference : PG. A-8

------------------------------- ADDITIONAL COMMENTS -------------------------
  OTHR = survey of utilities; includes tests

-----------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

    Component: Generator, with Diesel Engine Driver
       Design: Generator
 Normal State: Normally Standby
 Failure Mode: Fails to Start                         Data Record Number:  17

-------------------------NUCLARR-CALCULATED-RATES------------------------------
   Median:  4.936E-003   Upper Tolerance:  6.157E-003   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  1.247E+000

------------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
   Number of Failures   :       0        Number of Components  :      2
   Hours Per Component  : ------------   Demand Per Component  : --------
   Total Component Hours: ------------   Total Component Demand:      311

   Probability/Rate     : ------E----     Type         :
   Variance             : ------E----     Units        :
   Standard Deviation   : ------E----     Distribution :

                        ----Lower----   ----Upper----   -Confidence/Coverage-
   Confidence Bounds    : ------E----     ------E----              -- %
   Tolerance Bounds     : ------E----     ------E----              -- %
         Error Factor   : ------E----        Sided                 -- %

-------------------------------------------------------------------------------
 Component          1: 250 - 599 VAC (single voltage)
 Applications       2:
                    3:
-------------------------------------------------------------------------------
                 Origin                       Record Type
 Failure Data :   PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -    -
 Exposure Data:   PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -    -

 Data Collection Period:  83 through 85 (YY through YY)

 Include Circuit? : Y         Originating Facilities : HBR2-    -    -
 Nuclear Origin?  : Y         Failure Degree    :
 Bayesian Update? : N         Failure Severity : C
 IRADAP Suitable? : Y         Include System?   : I  Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y    Subsys. train : desig: A, B

------------------------------ REFERENCE INFORMATION --------------------------
   Document Number : 13386        Detail Reference : PG. A-8

-------------------------------- ADDITIONAL COMMENTS --------------------------
 OTHR = survey of utilities; includes tests

-------------------------------------------------------------------------------
```

```
         ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

    Component: Generator, with Diesel Engine Driver
       Design: Generator
 Normal State: Normally Standby
 Failure Mode: Fails to Start                         Data Record Number:  18

-------------------------NUCLARR-CALCULATED-RATES---------------------------
   Median:  4.189E-003   Upper Tolerance:  3.478E-002   Aggregation Type: 1
   Mean   : +0.000E+000  Error Factor   :  8.303E+000

----------------------REFERENCE-RAW-and PROBABILITY-DATA--------------------
   Number of Failures    :      0        Number of Components  :      2
   Hours Per Component   : ------------  Demand Per Component  : --------
   Total Component Hours: ------------   Total Component Demand:      54

   Probability/Rate    : ------E----     Type         :
   Variance            : ------E----     Units        :
   Standard Deviation : ------E----      Distribution :

                       ----Lower----   ----Upper----  -Confidence/Coverage-
   Confidence Bounds  : ------E----     ------E----             -- %
   Tolerance Bounds   : ------E----     ------E----             -- %
         Error Factor : ------E----        Sided                -- %

-----------------------------------------------------------------------------
 Component           1: 600 VAC - 8.24 kVAC (voltage range)
 Applications        2:
                     3:
-----------------------------------------------------------------------------
                 Origin                     Record Type
 Failure Data :   PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -
 Exposure Data:   PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -

 Data Collection Period:  83 through 84 (YY through YY)

 Include Circuit? : Y        Originating Facilities : RSS1-    -    -
 Nuclear Origin?  : Y        Failure Degree       :
 Bayesian Update? : N        Failure Severity : C
 IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y    Subsys. train : desig: A, B

--------------------------- REFERENCE INFORMATION ---------------------------
   Document Number : 13386       Detail Reference : PG. A-8

--------------------------- ADDITIONAL COMMENTS -----------------------------
 OTHR = survey of utilities; includes tests

-----------------------------------------------------------------------------
```

```
          ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

      Component: Generator, with Diesel Engine Driver
         Design: Generator
   Normal State: Normally Standby
   Failure Mode: Fails to Start                      Data Record Number:  19

-------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  1.775E-002   Upper Tolerance:  2.229E-002   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  1.255E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
    Number of Failures    :      0        Number of Components  :      1
    Hours Per Component   : ------------  Demand Per Component  : --------
    Total Component Hours: ------------   Total Component Demand:       85

    Probability/Rate    : ------E----     Type         :
    Variance            : ------E----     Units        :
    Standard Deviation : ------E----      Distribution :

                          ---Lower---     ---Upper---    -Confidence/Coverage-
    Confidence Bounds   : ------E----     ------E----              -- %
    Tolerance Bounds    : ------E----     ------E----              -- %
          Error Factor : ------E----         Sided                 -- %

-----------------------------------------------------------------------------
  Component          1: 600 VAC - 8.24 kVAC (voltage range)
  Applications       2:
                     3:
-----------------------------------------------------------------------------
                  Origin                         Record Type
  Failure Data :   PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -
  Exposure Data:   PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y          Originating Facilities : QAD2-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I   Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y     Subsys. train : desig: 2

-------------------------- REFERENCE INFORMATION ----------------------------
     Document Number : 13386        Detail Reference : PG. A-8

---------------------------- ADDITIONAL COMMENTS ----------------------------
  OTHR = survey of utilities; includes tests

-----------------------------------------------------------------------------
```

```
           ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

    Component: Generator, with Diesel Engine Driver
       Design: Generator
 Normal State: Normally Standby
 Failure Mode: Fails to Start                            Data Record Number:  20

-------------------------------NUCLARR-CALCULATED-RATES------------------------------
   Median:  9.654E-003   Upper Tolerance:  1.206E-002   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  1.249E+000

---------------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
   Number of Failures    :       0         Number of Components  :       1
   Hours Per Component   : ------------    Demand Per Component  : --------
   Total Component Hours: ------------     Total Component Demand:     158

   Probability/Rate     : ------E----      Type         :
   Variance             : ------E----      Units        :
   Standard Deviation : ------E----        Distribution :

                          ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds  : ------E----       ------E----               -- %
   Tolerance Bounds   : ------E----       ------E----               -- %
         Error Factor : ------E----           Sided                 -- %

------------------------------------------------------------------------------------
 Component            1: 600 VAC - 8.24 kVAC (voltage range)
 Applications         2:
                      3:
------------------------------------------------------------------------------------
                   Origin                         Record Type
 Failure Data :    PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -
 Exposure Data:    PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -

 Data Collection Period:  83 through 85 (YY through YY)

 Include Circuit? : Y          Originating Facilities : QAD -     -     -
 Nuclear Origin?  : Y          Failure Degree    :
 Bayesian Update? : N          Failure Severity : C
 IRADAP Suitable? : Y          Include System?   : I  Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y     Subsys. train : desig: 1/2

---------------------------- REFERENCE INFORMATION ---------------------------------
   Document Number : 13386        Detail Reference : PG. A-8

------------------------------ ADDITIONAL COMMENTS ---------------------------------
 OTHR = survey of utilities; includes tests

------------------------------------------------------------------------------------
```

```
            ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                        Data Record Number:  21

-----------------------------NUCLARR-CALCULATED-RATES----------------------------
   Median:  1.471E-002   Upper Tolerance:  1.842E-002   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  1.253E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
   Number of Failures    :      0         Number of Components  :      1
   Hours Per Component   : ------------   Demand Per Component  : --------
   Total Component Hours: ------------    Total Component Demand:      103

   Probability/Rate    : ------E----      Type         :
   Variance            : ------E----      Units        :
   Standard Deviation : ------E----       Distribution :

                         ----Lower----   ----Upper----   -Confidence/Coverage-
   Confidence Bounds   : ------E----     ------E----              -- %
   Tolerance Bounds    : ------E----     ------E----              -- %
         Error Factor : ------E----        Sided                   -- %

---------------------------------------------------------------------------------
  Component          1: 600 VAC - 8.24 kVAC (voltage range)
  Applications       2:
                     3:
---------------------------------------------------------------------------------
                 Origin                      Record Type
  Failure Data :   PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -
  Exposure Data:   PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y          Originating Facilities : QAD1-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y     Subsys. train : desig: 1

---------------------------- REFERENCE INFORMATION ------------------------------
    Document Number : 13386        Detail Reference : PG. A-8

------------------------------ ADDITIONAL COMMENTS ------------------------------
  OTHR = survey of utilities; includes tests

---------------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

```
     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                        Data Record Number:  22

--------------------------NUCLARR-CALCULATED-RATES-------------------------
   Median:  6.034E-003   Upper Tolerance:  7.530E-003   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  1.248E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
   Number of Failures    :       0        Number of Components  :      2
   Hours Per Component   : ------------   Demand Per Component  : --------
   Total Component Hours: ------------    Total Component Demand:     254

   Probability/Rate     : ------E----     Type          :
   Variance             : ------E----     Units         :
   Standard Deviation : ------E----       Distribution :

                          ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds  : ------E----      ------E----                 -- %
   Tolerance Bounds   : ------E----      ------E----                 -- %
         Error Factor : ------E----         Sided                    -- %

---------------------------------------------------------------------------
  Component            1: 600 VAC - 8.24 kVAC (voltage range)
  Applications         2:
                       3:
---------------------------------------------------------------------------
                   Origin                     Record Type
  Failure Data :   PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -
  Exposure Data:   PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y        Originating Facilities : PPS1-    -    -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : N        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y    Subsys. train : desig: A, B

----------------------- REFERENCE INFORMATION -----------------------------
    Document Number : 13386       Detail Reference : PG. A-8

------------------------ ADDITIONAL COMMENTS ------------------------------
  OTHR = survey or utilities; includes tests

---------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

```
  Component: Generator, with Diesel Engine Driver
     Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Start                          Data Record Number:  23

---------------------------NUCLARR-CALCULATED-RATES--------------------------
    Median:  1.222E-003  Upper Tolerance:  4.035E-003   Aggregation Type: 1
    Mean  :  1.033E-003  Error Factor   :  3.301E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
    Number of Failures     :      1        Number of Components   :      4
    Hours Per Component    : ------------  Demand Per Component   : --------
    Total Component Hours: ------------    Total Component Demand:      968

    Probability/Rate     : ------E----     Type          :
    Variance             : ------E----     Units         :
    Standard Deviation : ------E----       Distribution :

                           ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds    : ------E----      ------E----             -- %
    Tolerance Bounds     : ------E----      ------E----             -- %
          Error Factor   : ------E----        Sided                 -- %

-----------------------------------------------------------------------------
Component             1: 600 VAC - 8.24 kVAC (voltage range)
Applications          2:
                      3:
-----------------------------------------------------------------------------
                Origin                          Record Type
Failure Data :   PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -
Exposure Data:   PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -

Data Collection Period:  83 through 85 (YY through YY)

Include Circuit? : Y        Originating Facilities : PBS -    -    -
Nuclear Origin?  : Y        Failure Degree    :
Bayesian Update? : N        Failure Severity : C
IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y    Subsys. train : desig: E1, E2, E3, E4
---------------------------- REFERENCE INFORMATION ---------------------------
   Document Number : 13386        Detail Reference : PG. A-7
----------------------------- ADDITIONAL COMMENTS ----------------------------
OTHR = survey of utilities; includes tests
-----------------------------------------------------------------------------
```

```
             ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                          Data Record Number:  24

---------------------------NUCLARR-CALCULATED-RATES----------------------------
    Median: 2.716E-002  Upper Tolerance: 5.105E-002  Aggregation Type: 1
    Mean  : 2.632E-002  Error Factor   : 1.879E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures   :      5       Number of Components  :      2
    Hours Per Component  : ------------ Demand Per Component  : --------
    Total Component Hours: ------------ Total Component Demand:     190

    Probability/Rate   : ------E----    Type         :
    Variance           : ------E----    Units        :
    Standard Deviation : ------E----    Distribution :

                         ---Lower---   ---Upper---   -Confidence/Coverage-
    Confidence Bounds  : ------E----   ------E----             -- %
    Tolerance Bounds   : ------E----   ------E----             -- %
          Error Factor : ------E----      Sided                -- %

-------------------------------------------------------------------------------
  Component           1: 600 VAC - 8.24 kVAC (voltage range)
  Applications        2:
                      3:
-------------------------------------------------------------------------------
                    Origin                   Record Type
  Failure Data :    PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -
  Exposure Data:    PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y         Originating Facilities : PAL1-    -    -
  Nuclear Origin?  : Y         Failure Degree   :
  Bayesian Update? : N         Failure Severity : C
  IRADAP Suitable? : Y         Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y    Subsys. train : desig: 1-1, 1-2

------------------------------- REFERENCE INFORMATION -------------------------
    Document Number : 13386      Detail Reference : PG. A-7

-------------------------------- ADDITIONAL COMMENTS --------------------------
  OTHR = survey of utilities; includes tests

-------------------------------------------------------------------------------
```

```
           ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

    Component: Generator, with Diesel Engine Driver
       Design: Generator
 Normal State: Normally Standby
 Failure Mode: Fails to Start                          Data Record Number:  25

-------------------------NUCLARR-CALCULATED-RATES-------------------------
  Median:  3.126E-003   Upper Tolerance:  1.029E-002   Aggregation Type: 1
  Mean  :  2.646E-003   Error Factor   :  3.292E+000

--------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
  Number of Failures   :       1         Number of Components  :       2
  Hours Per Component  : ------------    Demand Per Component  : --------
  Total Component Hours: ------------    Total Component Demand:      378

  Probability/Rate   : ------E----       Type         :
  Variance           : ------E----       Units        :
  Standard Deviation : ------E----       Distribution :

                       ---Lower---    ---Upper---   -Confidence/Coverage-
  Confidence Bounds  : ------E----    ------E----               -- %
  Tolerance Bounds   : ------E----    ------E----               -- %
        Error Factor : ------E----       Sided                  -- %

--------------------------------------------------------------------------
 Component          1: 600 VAC - 8.24 kVAC (voltage range)
 Applications       2:
                    3:
--------------------------------------------------------------------------
                 Origin                   Record Type
 Failure Data :   PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -
 Exposure Data:   PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -

 Data Collection Period:  83 through 85 (YY through YY)

 Include Circuit? : Y         Originating Facilities : OCP1-    -    -
 Nuclear Origin?  : Y         Failure Degree    :
 Bayesian Update? : N         Failure Severity : C
 IRADAP Suitable? : Y         Include System?   : I   Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y     Subsys. train : desig: 1, 2

------------------------- REFERENCE INFORMATION -------------------------
    Document Number : 13386       Detail Reference : PG. A-7

------------------------- ADDITIONAL COMMENTS ---------------------------
 OTHR = survey of utilities; includes tests

--------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

```
    Component: Generator, with Diesel Engine Driver
       Design: Generator
 Normal State: Normally Standby
 Failure Mode: Fails to Start                       Data Record Number:  26

-----------------------------NUCLARR-CALCULATED-RATES---------------------------
   Median:  3.939E-003   Upper Tolerance:  1.295E-002   Aggregation Type: 1
   Mean  :  3.333E-003   Error Factor   :  3.287E+000

--------------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
   Number of Failures     :        1        Number of Components  :       2
   Hours Per Component    : ------------    Demand Per Component  : --------
   Total Component Hours: ------------      Total Component Demand:      300

   Probability/Rate     : ------E----       Type         :
   Variance             : ------E----       Units        :
   Standard Deviation   : ------E----       Distribution :

                          ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds    : ------E----      ------E----                  -- %
   Tolerance Bounds     : ------E----      ------E----                  -- %
         Error Factor   : ------E----         Sided                     -- %

--------------------------------------------------------------------------------
 Component             1: 600 VAC - 8.24 kVAC (voltage range)
 Applications          2:
                       3:
--------------------------------------------------------------------------------
                   Origin                      Record Type
 Failure Data :     PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -
 Exposure Data:     PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -

 Data Collection Period:  83 through 85 (YY through YY)

 Include Circuit? : Y        Originating Facilities : NAS2-    -    -
 Nuclear Origin?  : Y        Failure Degree    :
 Bayesian Update? : N        Failure Severity  : C
 IRADAP Suitable? : Y        Include System?   : I   Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y     Subsys. train : desig: 2H, 2J
---------------------------- REFERENCE INFORMATION -----------------------------
   Document Number : 13386        Detail Reference : PG. A-7
----------------------------- ADDITIONAL COMMENTS ------------------------------
 OTHR = survey of utilities; includes tests

--------------------------------------------------------------------------------
```

```
            ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                          Data Record Number:  27

-----------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  7.922E-003   Upper Tolerance:  9.895E-003   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  1.249E+000

------------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures    :       0          Number of Components   :      2
    Hours Per Component   : ------------     Demand Per Component   : --------
    Total Component Hours: ------------      Total Component Demand:      193

    Probability/Rate     : ------E----       Type         :
    Variance             : ------E----       Units        :
    Standard Deviation : ------E----         Distribution :

                          ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds    : ------E----      ------E----               -- %
    Tolerance Bounds     : ------E----      ------E----               -- %
          Error Factor : ------E----          Sided                   -- %

--------------------------------------------------------------------------------
  Component           1: 600 VAC - 8.24 kVAC (voltage range)
  Applications        2:
                      3:
--------------------------------------------------------------------------------
                 Origin                         Record Type
  Failure Data :   PLNT        TSTR-ADLG-OTHR-    -    -    -    -    -    -
  Exposure Data:   PLNT        TSTR-ADLG-OTHR-    -    -    -    -    -    -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y          Originating Facilities : NAS1-    -    -
  Nuclear Origin?  : Y          Failure Degree   :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y     Subsys. train : desig: 1H, 1J
-------------------------------- REFERENCE INFORMATION -------------------------
     Document Number : 13386       Detail Reference : PG. A-7
--------------------------------- ADDITIONAL COMMENTS --------------------------
  OTHR = survey of utilities; includes tests

--------------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                      Data Record Number:  28

 ---------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  1.775E-002  Upper Tolerance:  2.229E-002  Aggregation Type: 1
    Mean  : +0.000E+000  Error Factor   :  1.255E+000

 ------------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
    Number of Failures   :      0        Number of Components  :      2
    Hours Per Component  : ------------  Demand Per Component  : --------
    Total Component Hours: ------------  Total Component Demand:        85

    Probability/Rate   : ------E----     Type         :
    Variance           : ------E----     Units        :
    Standard Deviation : ------E----     Distribution :

                         ----Lower----   ----Upper----   -Confidence/Coverage-
    Confidence Bounds  : ------E----     ------E----             -- %
    Tolerance Bounds   : ------E----     ------E----             -- %
          Error Factor : ------E----        Sided                -- %
 -------------------------------------------------------------------------------
  Component          1: 600 VAC - 8.24 kVAC (voltage range)
  Applications       2:
                     3:
 -------------------------------------------------------------------------------
                Origin                      Record Type
  Failure Data :  PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -
  Exposure Data:  PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y        Originating Facilities : NMP1-    -    -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : N        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y     Subsys. train : desig: 102, 103

 ------------------------- REFERENCE INFORMATION -------------------------------
    Document Number : 13386        Detail Reference : PG. A-7

 ------------------------ ADDITIONAL COMMENTS ----------------------------------
  OTHR = survey of utilities; includes tests
 -------------------------------------------------------------------------------
```

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```
           ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                           Data Record Number:  29

-----------------------------NUCLARR-CALCULATED-RATES----------------------------
    Median:  5.874E-003   Upper Tolerance:  7.328E-003   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  1.248E+000

------------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures    :      0         Number of Components  :       2
    Hours Per Component   : ------------   Demand Per Component  : --------
    Total Component Hours: ------------    Total Component Demand:      261

    Probability/Rate    : ------E----      Type         :
    Variance            : ------E----      Units        :
    Standard Deviation : ------E----       Distribution :

                         ---Lower---      ---Upper---    -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----              -- %
    Tolerance Bounds    : ------E----      ------E----              -- %
          Error Factor : ------E----          Sided                 -- %

---------------------------------------------------------------------------------
  Component            1: 600 VAC - 8.24 kVAC (voltage range)
  Applications         2:
                       3:
---------------------------------------------------------------------------------
                   Origin                          Record Type
  Failure Data :    PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -
  Exposure Data:    PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -

  Data Collection Period:  85 through 85 (YY through YY)

  Include Circuit? : Y         Originating Facilities : MGS2-    -    -
  Nuclear Origin?  : Y         Failure Degree    :
  Bayesian Update? : N         Failure Severity : C
  IRADAP Suitable? : Y         Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y    Subsys. train : desig: 2A, 2B
------------------------------- REFERENCE INFORMATION ---------------------------
     Document Number : 13386        Detail Reference : PG. A-7
--------------------------------- ADDITIONAL COMMENTS ---------------------------
  OTHR = survey of utilities; includes tests

---------------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                       Data Record Number:  30

-----------------------NUCLARR-CALCULATED-RATES-----------------------------
    Median:  3.601E-003   Upper Tolerance:  4.482E-003   Aggregation Type: 1
    Mean   : +0.000E+000  Error Factor    :  1.245E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
    Number of Failures    :       0        Number of Components   :       2
    Hours Per Component   : ------------   Demand Per Component   : --------
    Total Component Hours: ------------   Total Component Demand:       427

    Probability/Rate    : ------E----      Type          :
    Variance            : ------E----      Units         :
    Standard Deviation  : ------E----      Distribution  :

                          ---Lower---     ---Upper---    -Confidence/Coverage-
    Confidence Bounds   : ------E----     ------E----              -- %
    Tolerance Bounds    : ------E----     ------E----              -- %
          Error Factor  : ------E----        Sided                 -- %

----------------------------------------------------------------------------
  Component          1: 600 VAC - 8.24 kVAC (voltage range)
  Applications       2:
                     3:
----------------------------------------------------------------------------
                  Origin                        Record Type
  Failure Data :   PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -
  Exposure Data:   PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y         Originating Facilities : MGS1-    -    -
  Nuclear Origin?  : Y         Failure Degree    :
  Bayesian Update? : N         Failure Severity : C
  IRADAP Suitable? : Y         Include System?  : I   Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y     Subsys. train : desig: 1A, 1B

------------------------- REFERENCE INFORMATION ----------------------------
    Document Number : 13386       Detail Reference : PG. A-6,7

------------------------- ADDITIONAL COMMENTS ------------------------------
  OTHR = survey of utilities; includes tests

----------------------------------------------------------------------------
```

```
          ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Start                          Data Record Number:  31

---------------------------NUCLARR-CALCULATED-RATES---------------------------
  Median:  1.592E-002   Upper Tolerance:  1.997E-002   Aggregation Type: 1
  Mean  : +0.000E+000   Error Factor   :  1.254E+000

--------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------------
  Number of Failures    :       0        Number of Components  :      2
  Hours Per Component   : ------------   Demand Per Component  : --------
  Total Component Hours: ------------    Total Component Demand:       95

  Probability/Rate     : ------E----     Type         :
  Variance             : ------E----     Units        :
  Standard Deviation : ------E----       Distribution :

                        ----Lower----    ----Upper----   -Confidence/Coverage-
  Confidence Bounds  : ------E----      ------E----                -- %
  Tolerance Bounds   : ------E----      ------E----                -- %
        Error Factor : ------E----         Sided                   -- %

--------------------------------------------------------------------------------
Component           1: 600 VAC - 8.24 kVAC (voltage range)
Applications        2:
                    3:
--------------------------------------------------------------------------------
               Origin                         Record Type
Failure Data :  PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -
Exposure Data:  PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -

Data Collection Period:  83 through 85 (YY through YY)

Include Circuit? : Y          Originating Facilities : MNP1-    -    -
Nuclear Origin?  : Y          Failure Degree   :
Bayesian Update? : N          Failure Severity : C
IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y     Subsys. train : desig: 11, 12
------------------------------ REFERENCE INFORMATION ---------------------------
   Document Number : 13386        Detail Reference : PG. A-6
------------------------------- ADDITIONAL COMMENTS ----------------------------
OTHR = survey of utilities; includes tests

--------------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

```
   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Start                          Data Record Number:  32

----------------------------NUCLARR-CALCULATED-RATES-----------------------------
  Median:  1.226E-002  Upper Tolerance:  2.470E-002  Aggregation Type: 1
  Mean  :  1.176E-002  Error Factor   :  2.015E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
  Number of Failures   :      4         Number of Components  :      2
  Hours Per Component  : ------------   Demand Per Component  : --------
  Total Component Hours: ------------   Total Component Demand:    340

  Probability/Rate     : ------E----    Type          :
  Variance             : ------E----    Units         :
  Standard Deviation   : ------E----    Distribution  :

                         ----Lower----  ----Upper----  -Confidence/Coverage-
  Confidence Bounds    : ------E----    ------E----              -- %
  Tolerance Bounds     : ------E----    ------E----              -- %
        Error Factor   : ------E----       Sided                 -- %

--------------------------------------------------------------------------------
Component           1: 600 VAC - 8.24 kVAC (voltage range)
Applications        2:
                    3:
--------------------------------------------------------------------------------
                  Origin                        Record Type
Failure Data :    PLNT        TSTR-ADLG-OTHR-   -    -    -    -    -    -
Exposure Data:    PLNT        TSTR-ADLG-OTHR-   -    -    -    -    -    -

Data Collection Period:  83 through 85 (YY through YY)

Include Circuit? : Y        Originating Facilities : MNS2-    -    -
Nuclear Origin?  : Y        Failure Degree    :
Bayesian Update? : N        Failure Severity  : C
IRADAP Suitable? : Y        Include System?   : I   Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y     Subsys. train : desig: 12U, 13U

----------------------------- REFERENCE INFORMATION ----------------------------
  Document Number : 13386        Detail Reference : PG. A-6

------------------------------ ADDITIONAL COMMENTS -----------------------------
OTHR - survey of utilities; includes tests

--------------------------------------------------------------------------------
```

```
          ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Start                          Data Record Number:  33

---------------------------NUCLARR-CALCULATED-RATES--------------------------
  Median:  8.251E-003   Upper Tolerance:  2.700E-002   Aggregation Type: 1
  Mean  :  6.993E-003   Error Factor   :  3.272E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
  Number of Failures     :      1       Number of Components  :      1
  Hours Per Component    : ------------ Demand Per Component  : --------
  Total Component Hours: ------------   Total Component Demand:      143

  Probability/Rate    : ------E----         Type         :
  Variance            : ------E----         Units        :
  Standard Deviation : ------E----          Distribution :

                        ----Lower----     ----Upper----   -Confidence/Coverage-
  Confidence Bounds  : ------E----       ------E----               -- %
  Tolerance Bounds   : ------E----       ------E----               -- %
        Error Factor : ------E----          Sided                  -- %

-----------------------------------------------------------------------------
Component            1: 600 VAC - 8.24 kVAC (voltage range)
Applications         2:
                     3:
-----------------------------------------------------------------------------
                 Origin                          Record Type
Failure Data :    PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -
Exposure Data:    PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -

Data Collection Period:  83 through 85 (YY through YY)

Include Circuit? : Y          Originating Facilities : MNS1-    -    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : N          Failure Severity : C
IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y     Subsys. train : desig: 11U
---------------------------- REFERENCE INFORMATION --------------------------
   Document Number : 13386       Detail Reference : PG. A-6
----------------------------- ADDITIONAL COMMENTS ---------------------------
OTHR = survey of utilities; includes tests

-----------------------------------------------------------------------------
```

```
             ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

      Component: Generator, with Diesel Engine Driver
         Design: Generator
   Normal State: Normally Standby
   Failure Mode: Fails to Start                         Data Record Number:  34

 -----------------------------NUCLARR-CALCULATED-RATES-----------------------------
     Median:  1.276E-002   Upper Tolerance:  1.598E-002   Aggregation Type: 1
     Mean   : +0.000E+000   Error Factor   :  1.252E+000

 ------------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------------
     Number of Failures    :       0         Number of Components   :      2
     Hours Per Component   : ------------    Demand Per Component   : --------
     Total Component Hours: ------------     Total Component Demand:      119

     Probability/Rate     : ------E----       Type          :
     Variance             : ------E----       Units         :
     Standard Deviation : ------E----         Distribution :

                            ---Lower---     ---Upper---     -Confidence/Coverage-
     Confidence Bounds    : ------E----     ------E----              -- %
     Tolerance Bounds     : ------E----     ------E----              -- %
          Error Factor : ------E----           Sided                  -- %

 ----------------------------------------------------------------------------------
   Component          1: 600 VAC - 8.24 kVAC (voltage range)
   Applications       2:
                      3:
 ----------------------------------------------------------------------------------
                  Origin                         Record Type
   Failure Data :   PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -
   Exposure Data:   PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -

   Data Collection Period:  83 through 85 (YY through YY)

   Include Circuit? : Y          Originating Facilities : MYP1-    -    -
   Nuclear Origin?  : Y          Failure Degree    :
   Bayesian Update? : N          Failure Severity : C
   IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : Y     Subsys. train : desig: 1A, 1B

 ------------------------------- REFERENCE INFORMATION ----------------------------
     Document Number : 13386          Detail Referance : PG. A-6

 ------------------------------- ADDITIONAL COMMENTS ------------------------------
   OTHR = survey of utilities; includes tests

 ----------------------------------------------------------------------------------
```

```
          ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                          Data Record Number:  35

----------------------------NUCLARR-CALCULATED-RATES----------------------------
   Median:  3.246E-003   Upper Tolerance:  1.069E-002   Aggregation Type: 1
   Mean  :  2.747E-003   Error Factor   :  3.293E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
   Number of Failures    :       1           Number of Components  :       2
   Hours Per Component   : ------------      Demand Per Component  : --------
   Total Component Hours: ------------       Total Component Demand:     364

   Probability/Rate    : ------E----         Type         :
   Variance            : ------E----         Units        :
   Standard Deviation  : ------E----         Distribution :

                         ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds   : ------E----      ------E----                -- %
   Tolerance Bounds    : ------E----      ------E----                -- %
         Error Factor  : ------E----         Sided                   -- %

--------------------------------------------------------------------------------
  Component            1: 600 VAC - 8.24 kVAC (voltage range)
  Applications         2:
                       3:
--------------------------------------------------------------------------------
                  Origin                       Record Type
  Failure Data :   PLNT        TSTR-ADLG-OTHR-    -    -    -    -    -    -
  Exposure Data:   PLNT        TSTR-ADLG-OTHR-    -    -    -    -    -    -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y          Originating Facilities : KNP1-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y    Subsys. train : desig: 1A, 1B

------------------------------ REFERENCE INFORMATION ---------------------------
     Document Number : 13386       Detail Reference : PG. A-6

------------------------------- ADDITIONAL COMMENTS ----------------------------
  OTHR = survey of utilities; includes tests

--------------------------------------------------------------------------------
```

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ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

Component: Generator, with Diesel Engine Driver
Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Start
Data Record Number: 36

NUCLARR-CALCULATED-RATES

Median:	5.896E-003	Upper Tolerance:	7.347E-003	Aggregation Type:	1
Mean :	+0.000E+000	Error Factor :	1.246E+000		

REFERENCE-RAW-and-PROBABILITY-DATA

Number of Failures :	0	Number of Components :	3
Hours Per Component :	------------	Demand Per Component :	--------
Total Component Hours:	------------	Total Component Demand:	260

Probability/Rate :	------E----	Type :	
Variance :	------E----	Units :	
Standard Deviation :	------E----	Distribution :	

	Lower	Upper	-Confidence/Coverage-
Confidence Bounds :	------E----	------E----	-- %
Tolerance Bounds :	------E----	------E----	-- %
Error Factor :	------E----	Sided	-- %

Component Applications
1: 250 - 599 VAC (single voltage)
2:
3:

	Origin	Record Type
Failure Data :	PLNT	TSTR-ADLG-OTHR- - - - - - -
Exposure Data:	PLNT	TSTR-ADLG-OTHR- - - - - - -

Data Collection Period: 83 through 85 (YY through YY)

Include Circuit? :	Y	Originating Facilities :	IPS3- - -
Nuclear Origin? :	Y	Failure Degree :	
Bayesian Update? :	N	Failure Severity :	C
IRADAP Suitable? :	Y	Include System? :	I Systems : EK- - - -
Safety Grade? :	Y		
Primary Failure? :	Y	Subsys. train :	desig: 31, 32, 33

REFERENCE INFORMATION

Document Number : 13386 Detail Reference : PG. A-6

ADDITIONAL COMMENTS

OTHR = survey of utilities; includes tests

```
           ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

      Component: Generator, with Diesel Engine Driver
         Design: Generator
   Normal State: Normally Standby
   Failure Mode: Fails to Start                         Data Record Number:  37

------------------------------NUCLARR-CALCULATED-RATES------------------------------
    Median:  3.331E-003   Upper Tolerance:  8.459E-003   Aggregation Type: 1
    Mean  :  3.063E-003   Error Factor   :  2.540E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
    Number of Failures    :      2         Number of Components   :      3
    Hours Per Component   : ------------   Demand Per Component   : --------
    Total Component Hours: ------------   Total Component Demand:      653

    Probability/Rate    : ------E----       Type          :
    Variance            : ------E----       Units         :
    Standard Deviation : ------E----       Distribution :

                          ----Lower----   ----Upper----   -Confidence/Coverage-
    Confidence Bounds  : ------E----      ------E----              -- %
    Tolerance Bounds   : ------E----      ------E----              -- %
          Error Factor : ------E----          Sided                -- %

------------------------------------------------------------------------------------
   Component            1: 250 - 599 VAC (single voltage)
   Applications         2:
                        3:
------------------------------------------------------------------------------------
                      Origin                          Record Type
   Failure Data :     PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -
   Exposure Data:     PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -

   Data Collection Period:  83 through 85 (YY through YY)

   Include Circuit? : Y          Originating Facilities : IPS2-    -    -
   Nuclear Origin?  : Y          Failure Degree    :
   Bayesian Update? : N          Failure Severity : C
   IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : Y     Subsys. train : desig: 21, 22, 23

------------------------------ REFERENCE INFORMATION ------------------------------
      Document Number : 13386        Detail Reference : PG. A-5,6

------------------------------ ADDITIONAL COMMENTS --------------------------------
   OTHR = survey of utilities; includes tests

------------------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                          Data Record Number:  38

--------------------------NUCLARR-CALCULATED-RATES-----------------------------
    Median:  7.679E-003  Upper Tolerance:  1.942E-002  Aggregation Type: 1
    Mean  :  7.067E-003  Error Factor   :  2.529E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures   :       2          Number of Components  :      3
    Hours Per Component  : ------------     Demand Per Component  : --------
    Total Component Hours: ------------     Total Component Demand:     283

    Probability/Rate   : ------E----        Type          :
    Variance           : ------E----        Units         :
    Standard Deviation : ------E----        Distribution  :

                         ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds  : ------E----      ------E----               -- %
    Tolerance Bounds   : ------E----      ------E----               -- %
          Error Factor : ------E----         Sided                  -- %

-------------------------------------------------------------------------------
  Component            1: 600 VAC - 8.24 kVAC (voltage range)
  Applications         2:
                       3:
-------------------------------------------------------------------------------
                   Origin                        Record Type
  Failure Data :   PLNT        TSTR-ADLG-OTHR-   -    -    -    -    -    -
  Exposure Data:   PLNT        TSTR-ADLG-OTHR-   -    -    -    -    -    -

  Data Collection Period:  85 through 85 (YY through YY)

  Include Circuit? : Y          Originating Facilities : GGS1-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y      Subsys. train : desig: 11, 12, 13

------------------------------ REFERENCE INFORMATION --------------------------
    Document Number : 13386        Detail Reference : PG. A-5

------------------------------ ADDITIONAL COMMENTS ----------------------------
  OTHR = survey of utilities; includes tests

-------------------------------------------------------------------------------
```

```
ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Start                          Data Record Number:  39

------------------------NUCLARR-CALCULATED-RATES------------------------
  Median:  1.008E-002  Upper Tolerance:  3.292E-002  Aggregation Type: 1
  Mean  :  8.547E-003  Error Factor   :  3.265E+000

-------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------
  Number of Failures    :       1        Number of Components  :      2
  Hours Per Component   : ------------   Demand Per Component  : --------
  Total Component Hours: ------------    Total Component Demand:     117

  Probability/Rate    : ------E----      Type         :
  Variance            : ------E----      Units        :
  Standard Deviation : ------E----       Distribution :

                       ----Lower----   ----Upper----   -Confidence/Coverage-
  Confidence Bounds  : ------E----     ------E----              -- %
  Tolerance Bounds   : ------E----     ------E----              -- %
        Error Factor : ------E----        Sided                 -- %

------------------------------------------------------------------------
Component           1: 250 - 599 VAC (single voltage)
Applications        2:
                    3:
------------------------------------------------------------------------
             Origin                         Record Type
Failure Data :  PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -
Exposure Data:  PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -

Data Collection Period:  83 through 85 (YY through YY)

Include Circuit? : Y          Originating Facilities : REG1-    -    -
Nuclear Origin?  : Y          Failure Degree   :
Bayesian Update? : N          Failure Severity : C
IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y    Subsys. train : desig: 1A, 1B

---------------------------- REFERENCE INFORMATION ----------------------
   Document Number : 13386       Detail Reference : PG. A-5

---------------------------- ADDITIONAL COMMENTS ------------------------
OTHR = survey of utilities; includes tests

------------------------------------------------------------------------
```

```
           ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                          Data Record Number:  40

---------------------------------NUCLARR-CALCULATED-RATES-----------------------------
    Median:  1.137E-002  Upper Tolerance:  2.868E-002  Aggregation Type: 1
    Mean  :  1.047E-002  Error Factor   :  2.522E+000

-----------------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures   :      2          Number of Components  :      2
    Hours Per Component  : ------------    Demand Per Component  : --------
    Total Component Hours: ------------    Total Component Demand:     191

    Probability/Rate   : ------E----       Type         :
    Variance           : ------E----       Units        :
    Standard Deviation : ------E----       Distribution :

                          ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds  : ------E----       ------E----                -- %
    Tolerance Bounds   : ------E----       ------E----                -- %
         Error Factor  : ------E----          Sided                   -- %

---------------------------------------------------------------------------------
  Component          1: Voltage level Unknown - AC
  Applications       2:
                     3:
---------------------------------------------------------------------------------
                   Origin                      Record Type
  Failure Data :   PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -
  Exposure Data:   PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -

  Data Collection Period:  83 through 84 (YY through YY)

  Include Circuit? : Y          Originating Facilities : FSV1-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : N          Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y      Subsys. train : desig: A, B

----------------------------- REFERENCE INFORMATION ------------------------------
    Document Number : 13386        Detail Reference : PG. A-5
----------------------------- ADDITIONAL COMMENTS --------------------------------
  OTHR = survey of utilities; includes tests; mfg = CAT; rating = 1210 KW

---------------------------------------------------------------------------------
```

```
              ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

      Component: Generator, with Diesel Engine Driver
         Design: Generator
   Normal State: Normally Standby
   Failure Mode: Fails to Start                        Data Record Number:  41

-----------------------------NUCLARR-CALCULATED-RATES-----------------------------
    Median:  1.374E-002  Upper Tolerance:  3.458E-002  Aggregation Type: 1
    Mean  :  1.266E-002  Error Factor   :  2.517E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------------
    Number of Failures    :      2          Number of Components  :      2
    Hours Per Component   : ------------    Demand Per Component  : --------
    Total Component Hours: ------------     Total Component Demand:      158

    Probability/Rate    : ------E----       Type         :
    Variance            : ------E----       Units        :
    Standard Deviation  : ------E----       Distribution :

                          ---Lower---      ---Upper---    -Confidence/Coverage-
    Confidence Bounds   : ------E----     ------E----               -- %
    Tolerance Bounds    : ------E----     ------E----               -- %
          Error Factor  : ------E----        Sided                  -- %

-----------------------------------------------------------------------------------
  Component          1: 600 VAC - 8.24 kVAC (voltage range)
  Applications       2:
                     3:
-----------------------------------------------------------------------------------
                  Origin                        Record Type
  Failure Data :   PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -
  Exposure Data:   PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y          Originating Facilities : FCS1-    -    -
  Nuclear Origin?  : Y          Failure Degree   :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y    Subsys. train : desig: 1, 2

------------------------------- REFERENCE INFORMATION -------------------------------
    Document Number : 13386        Detail Reference : PG. A-5

-------------------------------- ADDITIONAL COMMENTS --------------------------------
  OTHR = survey of utilities; includes tests

-----------------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

```
   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Start                         Data Record Number:  42

-------------------------NUCLARR-CALCULATED-RATES----------------------------
   Median:  1.730E-003   Upper Tolerance:  2.156E-003   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  1.246E+000

--------------------REFERENCE-RAW-and-PRORABILITY-DATA-----------------------
   Number of Failures   :      0        Number of Components  :      4
   Hours Per Component  : ------------  Demand Per Component  : --------
   Total Component Hours: ------------  Total Component Demand:    891

   Probability/Rate    : ------E----    Type         :
   Variance            : ------E----    Units        :
   Standard Deviation  : ------E----    Distribution :

                         ---Lower---     ---Upper---    -Confidence/Coverage-
   Confidence Bounds   : ------E----     ------E----                -- %
   Tolerance Bounds    : ------E----     ------E----                -- %
         Error Factor  : ------E----        Sided                   -- %
-----------------------------------------------------------------------------
Component           1: 600 VAC - 8.24 kVAC (voltage range)
Applications        2:
                    3:
-----------------------------------------------------------------------------
                 Origin                       Record Type
Failure Data :   PLNT      TSTR-ADLG-OTHR-    -   -   -   -   -   -
Exposure Data:   PLNT      TSTR-ADLG-OTHR-    -   -   -   -   -   -

Data Collection Period:  83 through 85 (YY through YY)

Include Circuit? : Y        Originating Facilities : JAF1-    -    -
Nuclear Origin?  : Y        Failure Degree    :
Bayesian Update? : N        Failure Severity : C
IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y    Subsys. train : desig: A, B, C, D

---------------------------- REFERENCE INFORMATION --------------------------
   Document Number : 13386       Detail Reference : PG. A-4,5

----------------------------- ADDITIONAL COMMENTS ---------------------------
OTHR = survey of utilities; includes tests

-----------------------------------------------------------------------------
```

```
          ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                        Data Record Number:  43

  ─────────────────────────NUCLARR-CALCULATED-RATES─────────────────────────
    Median:  6.099E-003   Upper Tolerance:  5.025E-002   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  8.240E+000

  ────────────────────REFERENCE-RAW-and-PROBABILITY-DATA────────────────────
    Number of Failures    :       0        Number of Components   :      1
    Hours Per Component   : ------------   Demand Per Component   : --------
    Total Component Hours: ------------    Total Component Demand:       37

    Probability/Rate   : ------E----       Type         :
    Variance           : ------E----       Units        :
    Standard Deviation : ------E----       Distribution :

                         ───Lower───    ───Upper───   -Confidence/Coverage-
    Confidence Bounds  : ------E----    ------E----                -- %
    Tolerance Bounds   : ------E----    ------E----                -- %
          Error Factor : ------E----       Sided                   -- %

  ──────────────────────────────────────────────────────────────────────────
  Component          1: 600 VAC - 8.24 kVAC (voltage range)
  Applications       2:
                     3:
  ──────────────────────────────────────────────────────────────────────────
                 Origin                         Record Type
  Failure Data :  PLNT        TSTR-ADLG-OTHR-    -    -    -    -    -    -
  Exposure Data:  PLNT        TSTR-ADLG-OTHR-    -    -    -    -    -    -

  Data Collection Period:  85 through 85 (YY through YY)

  Include Circuit? : Y          Originating Facilities : JMF -    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y    Subsys. train : desig: 2C

  ────────────────────── REFERENCE INFORMATION ─────────────────────────────
    Document Number : 13366        Detail Reference : PG. A-4

  ─────────────────────── ADDITIONAL COMMENTS ──────────────────────────────
  OTHR = survey of utilities; includes tests; rating = 4075 KW

  ──────────────────────────────────────────────────────────────────────────
```

'465

```
          ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                        Data Record Number:  44

---------------------------NUCLARR-CALCULATED-RATES-----------------------------
    Median:  1.735E-002  Upper Tolerance:  2.177E-002   Aggregation Type: 1
    Mean  : +0.000E+000  Error Factor   :  1.254E+000

------------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures    :      0         Number of Components  :      1
    Hours Per Component   : ------------   Demand Per Component  : --------
    Total Component Hours: ------------    Total Component Demand:      87

    Probability/Rate    : ------E----      Type          :
    Variance            : ------E----      Units         :
    Standard Deviation : ------E----       Distribution :

                          ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----              -- %
    Tolerance Bounds    : ------E----      ------E----              -- %
         Error Factor : ------E----          Sided                  -- %

--------------------------------------------------------------------------------
  Component          1: 600 VAC - 8.24 kVAC (voltage range)
  Applications       2:
                     3:
--------------------------------------------------------------------------------
                  Origin                         Record Type
  Failure Data :   PLNT        TSTR-ADLG-OTHR-   -    -    -    -    -    -
  Exposure Data:   PLNT        TSTR-ADLG-OTHR-   -    -    -    -    -    -

  Data Collection Period:  83 through 84 (YY through YY)

  Include Circuit? : Y          Originating Facilities : JMF -    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y     Subsys. train : desig: 2C

------------------------------ REFERENCE INFORMATION ---------------------------
     Document Number : 13386        Detail Reference : PG. A-4

------------------------------- ADDITIONAL COMMENTS ----------------------------
  OTHR = survey of utilities; includes tests; rating = 2850 KW

--------------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

```
   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Start                          Data Record Number:  45

------------------------------NUCLARR-CALCULATED-RATES------------------------------
  Median:  5.899E-003   Upper Tolerance:  1.194E-002   Aggregation Type: 1
  Mean  :  5.658E-003   Error Factor   :  2.024E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
  Number of Failures    :       4          Number of Components  :       4
  Hours Per Component   : ------------     Demand Per Component  : --------
  Total Component Hours: ------------      Total Component Demand:      707

  Probability/Rate     : ------E----       Type         :
  Variance             : ------E----       Units        :
  Standard Deviation   : ------E----       Distribution :

                         ---Lower---     ---Upper---     -Confidence/Coverage-
  Confidence Bounds   : ------E----     ------E----              -- %
  Tolerance Bounds    : ------E----     ------E----              -- %
       Error Factor   : ------E----        Sided                 -- %

------------------------------------------------------------------------------------
Component           1: 600 VAC - 8.24 kVAC (voltage range)
Applications        2:
                    3:
------------------------------------------------------------------------------------
                Origin                           Record Type
Failure Data :   PLNT       TSTR-ADLG-OTHR-   -    -    -    -    -    -
Exposure Data:   PLNT       TSTR-ADLG-OTHR-   -    -    -    -    -    -

Data Collection Period:  83 through 85 (YY through YY)

Include Circuit? : Y          Originating Facilities : JMF -    -    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : N          Failure Severity : C
IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y     Subsys. train : desig: 1-2A, 1B, 1C, 2B
---------------------------- REFERENCE INFORMATION ----------------------------
   Document Number : 13386        Detail Reference : PG. A-4
----------------------------- ADDITIONAL COMMENTS -----------------------------
OTHR = survey of utilities; includes tests
------------------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

```
    Component: Generator, with Diesel Engine Driver
       Design: Generator
 Normal State: Normally Standby
 Failure Mode: Fails to Start                        Data Record Number:  46

------------------------NUCLARR-CALCULATED-RATES--------------------------------
   Median:  4.269E-002  Upper Tolerance:  9.217E-002  Aggregation Type: 1
   Mean  :  4.054E-002  Error Factor   :  2.159E+000

---------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
   Number of Failures    :       3         Number of Components   :      1
   Hours Per Component   : ------------    Demand Per Component   : --------
   Total Component Hours: ------------     Total Component Demand:        74

   Probability/Rate      : ------E----     Type          :
   Variance              : ------E----     Units         :
   Standard Deviation    : ------E----     Distribution  :

                          ---Lower---    ---Upper---   -Confidence/Coverage-
   Confidence Bounds     : ------E----    ------E----              -- %
   Tolerance Bounds      : ------E----    ------E----              -- %
         Error Factor    : ------E----       Sided                 -- %

--------------------------------------------------------------------------------
 Component          1: 600 VAC - 8.24 kVAC (voltage range)
 Applications       2:
                    3:
--------------------------------------------------------------------------------
                Origin                      Record Type
 Failure Data :  PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -
 Exposure Data:  PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -

 Data Collection Period:  83 through 85 (YY through YY)

 Include Circuit? : Y        Originating Facilities : DRS3-    -    -
 Nuclear Origin?  : Y        Failure Degree    :
 Bayesian Update? : N        Failure Severity  : C
 IRADAP Suitable? : Y        Include System?   : I   Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y     Subsys. train : desig: 3

------------------------- REFERENCE INFORMATION --------------------------------
   Document Number : 13386       Detail Reference : PG. A-4

------------------------- ADDITIONAL COMMENTS ----------------------------------
 OTHR = survey of utilities; includes tests

--------------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

    Component: Generator, with Diesel Engine Driver
       Design: Generator
 Normal State: Normally Standby
 Failure Mode: Fails to Start                        Data Record Number:  47

 ------------------------NUCLARR-CALCULATED-RATES------------------------------
   Median:  1.883E-002   Upper Tolerance:  2.364E-002   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  1.255E+000

 ----------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
   Number of Failures    :       0          Number of Components  :       1
   Hours Per Component   : ------------     Demand Per Component  : --------
   Total Component Hours: ------------      Total Component Demand:      80

   Probability/Rate    : ------E----        Type         :
   Variance            : ------E----        Units        :
   Standard Deviation : ------E----         Distribution :

                        ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds  : ------E----      ------E----               -- %
   Tolerance Bounds   : ------E----      ------E----               -- %
         Error Factor : ------E----         Sided                  -- %

 ------------------------------------------------------------------------------
 Component           1: 600 VAC - 8.24 kVAC (voltage range)
 Applications        2:
                     3:
 ------------------------------------------------------------------------------
                  Origin                          Record Type
 Failure Data :    PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -
 Exposure Data:    PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -

 Data Collection Period:  83 through 85 (YY through YY)

 Include Circuit? : Y         Originating Facilities : DRS2-    -    -
 Nuclear Origin?  : Y         Failure Degree    :
 Bayesian Update? : N         Failure Severity : C
 IRADAP Suitable? : Y         Include System?  : I  Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y     Subsys. train : desig: 2

 ------------------------ REFERENCE INFORMATION -------------------------------
    Document Number : 13386       Detail Reference : PG. A-4

 --------------------------- ADDITIONAL COMMENTS ------------------------------
 OTHR = survey of utilities; includes tests

 ------------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

```
  Component: Generator, with Diesel Engine Driver
     Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Start                          Data Record Number:  48

-------------------------NUCLARR-CALCULATED-RATES---------------------------
  Median:  1.043E-002   Upper Tolerance:  2.297E-002   Aggregation Type: 1
  Mean  :  9.868E-003   Error Factor   :  2.203E+000

--------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
  Number of Failures     :      3        Number of Components    :      3
  Hours Per Component    : ------------  Demand Per Component    : --------
  Total Component Hours: ------------    Total Component Demand:      304

  Probability/Rate    : ------E----      Type         :
  Variance            : ------E----      Units        :
  Standard Deviation  : ------E----      Distribution :

                         ----Lower----   ----Upper----   -Confidence/Coverage-
  Confidence Bounds   : ------E----      ------E----               -- %
  Tolerance Bounds    : ------E----      ------E----               -- %
        Error Factor  : ------E----        Sided                   -- %

----------------------------------------------------------------------------
Component             1: Voltage level Unknown - AC
Applications          2:
                      3:
----------------------------------------------------------------------------
                 Origin                        Record Type
Failure Data :   PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -
Exposure Data:   PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -

Data Collection Period:  85 through 85 (YY through YY)

Include Circuit? : Y          Originating Facilities : DCP1-    -    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : N          Failure Severity  : C
IRADAP Suitable? : Y          Include System?   : I   Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y       Subsys. train : desig: 1-1, 1-2, 1-3

--------------------------- REFERENCE INFORMATION --------------------------
  Document Number : 13386          Detail Reference : PG. A-4

---------------------------- ADDITIONAL COMMENTS ---------------------------
OTHR = survey of utilities; includes tests

----------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

Component: Generator, with Diesel Engine Driver
Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Start
Data Record Number: 49

NUCLARR-CALCULATED-RATES

Median: 7.679E-003   Upper Tolerance: 1.942E-002   Aggregation Type: 1
Mean : 7.067E-003   Error Factor : 2.529E+000

REFERENCE-RAW-and-PROBABILITY-DATA

Number of Failures : 2   Number of Components : 2
Hours Per Component : ------------   Demand Per Component : --------
Total Component Hours: ------------   Total Component Demand: 283

Probability/Rate : ------E----   Type :
Variance : ------E----   Units :
Standard Deviation : ------E----   Distribution :

	Lower	Upper	-Confidence/Coverage-
Confidence Bounds :	------E----	------E----	-- %
Tolerance Bounds :	------E----	------E----	-- %
Error Factor :	------E----	Sided	-- %

Component Applications
1: 600 VAC - 8.24 kVAC (voltage range)
2:
3:

	Origin	Record Type						
Failure Data :	PLNT	TSTR-ADLG-OTHR-	-	-	-	-	-	-
Exposure Data:	PLNT	TSTR-ADLG-OTHR-	-	-	-	-	-	-

Data Collection Period: 83 through 85 (YY through YY)

Include Circuit? : Y   Originating Facilities : DBS1- - -
Nuclear Origin? : Y   Failure Degree :
Bayesian Update? : N   Failure Severity : C
IRADAP Suitable? : Y   Include System? : I   Systems : EK- - - -
Safety Grade? : Y
Primary Failure? : Y   Subsys. train : desig: 1, 2

REFERENCE INFORMATION

Document Number : 13386   Detail Reference : PG. A-4

ADDITIONAL COMMENTS

OTHR = survey of utilities; includes tests

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                      Data Record Number:  50

------------------------NUCLARR-CALCULATED-RATES------------------------------
  Median:  9.477E-003  Upper Tolerance:  1.183E-002  Aggregation Type: 1
  Mean  : +0.000E+000  Error Factor   :  1.249E+000

-------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
  Number of Failures   :      0        Number of Components   :      2
  Hours Per Component  : ------------  Demand Per Component   : --------
  Total Component Hours: ------------  Total Component Demand:      161

  Probability/Rate    : ------E----    Type         :
  Variance            : ------E----    Units        :
  Standard Deviation  : ------E----    Distribution :

                        ---Lower---    ---Upper---   -Confidence/Coverage-
  Confidence Bounds   : ------E----    ------E----            -- %
  Tolerance Bounds    : ------E----    ------E----            -- %
        Error Factor  : ------E----       Sided               -- %

------------------------------------------------------------------------------
 Component          1: 600 VAC - 8.24 kVAC (voltage range)
 Applications       2:
                    3:
------------------------------------------------------------------------------
                 Origin                          Record Type
 Failure Data :   PLNT       TSTR-ADLG-OTHR-   -    -    -    -    -    -
 Exposure Data:   PLNT       TSTR-ADLG-OTHR-   -    -    -    -    -    -

 Data Collection Period:  83 through 85 (YY through YY)

 Include Circuit? : Y        Originating Facilities : CRP3-    -    -
 Nuclear Origin?  : Y        Failure Degree    :
 Bayesian Update? : N        Failure Severity  : C
 IRADAP Suitable? : Y        Include System?   : I  Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y    Subsys. train : desig: 3A, 3B

------------------------- REFERENCE INFORMATION ------------------------------
   Document Number : 13386       Detail Reference : PG. A-4

-------------------------- ADDITIONAL COMMENTS -------------------------------
 OTHR = survey of utilities; includes tests

------------------------------------------------------------------------------
```

```
          ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                        Data Record Number:  51

--------------------------NUCLARR-CALCULATED-RATES-----------------------------
   Median:  1.497E-002  Upper Tolerance:  3.765E-002   Aggregation Type: 1
   Mean  :  1.379E-002  Error Factor    :  2.515E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
   Number of Failures    :       2          Number of Components  :      2
   Hours Per Component   : ------------     Demand Per Component  : --------
   Total Component Hours: ------------      Total Component Demand:      145

   Probability/Rate    : ------E----        Type         :
   Variance            : ------E----        Units        :
   Standard Deviation  : ------E----        Distribution :

                         ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds   : ------E----      ------E----              -- %
   Tolerance Bounds    : ------E----      ------E----              -- %
         Error Factor  : ------E----         Sided                 -- %

-------------------------------------------------------------------------------
  Component          1: 600 VAC - 8.24 kVAC (voltage range)
  Applications       2:
                     3:
-------------------------------------------------------------------------------
                 Origin                          Record Type
  Failure Data :  PLNT       TSTR-ADLG-OTHR-   -    -    -    -    -    -
  Exposure Data:  PLNT       TSTR-ADLG-OTHR-   -    -    -    -    -    -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y          Originating Facilities : CPR1-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y     Subsys. train : desig: 1, 2

----------------------------- REFERENCE INFORMATION ---------------------------
     Document Number : 13386       Detail Reference : PG. A-4

------------------------------ ADDITIONAL COMMENTS ----------------------------
  OTHR = survey of utilities; includes tests

-------------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

Component: Generator, with Diesel Engine Driver
Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Start
Data Record Number: 52

NUCLARR-CALCULATED-RATES

Median:	1.259E-002	Upper Tolerance:	2.537E-002	Aggregation Type:	1
Mean :	1.208E-002	Error Factor :	2.015E+000		

REFERENCE-RAW-and-PROBABILITY-DATA

Number of Failures :	4	Number of Components :	2
Hours Per Component :	------------	Demand Per Component :	--------
Total Component Hours:	------------	Total Component Demand:	331

Probability/Rate :	------E----	Type :	
Variance :	------E----	Units :	
Standard Deviation :	------E----	Distribution :	

	Lower	Upper	Confidence/Coverage
Confidence Bounds :	------E----	------E----	-- %
Tolerance Bounds :	------E----	------E----	-- %
Error Factor :	------E----	Sided	-- %

Component Applications
1: 600 VAC - 8.24 kVAC (voltage range)
2:
3:

	Origin	Record Type
Failure Data :	PLNT	TSTR-ADLG-OTHR- - - - - - -
Exposure Data:	PLNT	TSTR-ADLG-OTHR- - - - - - -

Data Collection Period: 83 through 85 (YY through YY)

Include Circuit? :	Y	Originating Facilities :	DCC2- - -
Nuclear Origin? :	Y	Failure Degree :	
Bayesian Update? :	N	Failure Severity :	C
IRADAP Suitable? :	Y	Include System? :	I Systems : EK- - - -
Safety Grade? :	Y		
Primary Failure? :	Y	Subsys. train : desig:	2AB, 2CD

REFERENCE INFORMATION

Document Number : 13386
Detail Reference : PG. A-3,4

ADDITIONAL COMMENTS

OTHR = survey of utilities; includes tests

```
     ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

    Component: Generator, with Diesel Engine Driver
       Design: Generator
 Normal State: Normally Standby
 Failure Mode: Fails to Start                       Data Record Number:  53

 -------------------------NUCLARR-CALCULATED-RATES---------------------------
   Median:  8.488E-003   Upper Tolerance:  2.145E-002   Aggregation Type: 1
   Mean  :  7.812E-003   Error Factor   :  2.527E+000

 ----------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
   Number of Failures     :       2        Number of Components  :      2
   Hours Per Component    : ------------   Demand Per Component  : --------
   Total Component Hours: ------------     Total Component Demand:      256

   Probability/Rate    : ------E----       Type         :
   Variance            : ------E----       Units        :
   Standard Deviation : ------E----        Distribution :

                          ---Lower---     ---Upper---   -Confidence/Coverage-
   Confidence Bounds   : ------E----     ------E----              -- %
   Tolerance Bounds    : ------E----     ------E----              -- %
         Error Factor : ------E----         Sided                 -- %

 ----------------------------------------------------------------------------
 Component          1: 600 VAC - 8.24 kVAC (voltage range)
 Applications       2:
                    3:
 ----------------------------------------------------------------------------
                 Origin                     Record Type
 Failure Data :   PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -
 Exposure Data:   PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -

 Data Collection Period:  83 through 85 (YY through YY)

 Include Circuit? : Y          Originating Facilities : DCC1-    -    -
 Nuclear Origin?  : Y          Failure Degree   :
 Bayesian Update? : N          Failure Severity : C
 IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y     Subsys. train : desig: 1AB, 1CD

 ---------------------------- REFERENCE INFORMATION -------------------------
    Document Number : 13386       Detail Reference : PG. A-3

 ---------------------------- ADDITIONAL COMMENTS ---------------------------
 OTHR = survey of utilities; includes tests

 ----------------------------------------------------------------------------
```

'4/5

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

```
   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Start                          Data Record Number:  54

------------------------------NUCLARR-CALCULATED-RATES------------------------------
   Median:  4.189E-003   Upper Tolerance:  3.478E-002   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  8.303E+000

---------------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------------
   Number of Failures    :       0        Number of Components  :      2
   Hours Per Component   : ------------   Demand Per Component  : --------
   Total Component Hours: ------------    Total Component Demand:         54

   Probability/Rate    : ------E----      Type         :
   Variance            : ------E----      Units        :
   Standard Deviation  : ------E----      Distribution :

                         ----Lower----    ----Upper----    -Confidence/Coverage-
   Confidence Bounds   : ------E----      ------E----                -- %
   Tolerance Bounds    : ------E----      ------E----                -- %
         Error Factor  : ------E----         Sided                   -- %

------------------------------------------------------------------------------------
Component           1: 600 VAC - 8.24 kVAC (voltage range)
Applications        2:
                    3:
------------------------------------------------------------------------------------
                Origin                           Record Type
Failure Data :   PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -
Exposure Data:   PLNT       TSTR-ADLG-OTHR-    -    -    -    -    -    -

Data Collection Period:  83 through 83 (YY through YY)

Include Circuit? : Y        Originating Facilities : HNP1-    -    -
Nuclear Origin?  : Y        Failure Degree     :
Bayesian Update? : N        Failure Severity : C
IRADAP Suitable? : Y        Include System?  : I   Systems : EK-   -   -   -
Safety Grade?    : Y
Primary Failure? : Y     Subsys. train : desig: A, B

------------------------------ REFERENCE INFORMATION ------------------------------
   Document Number : 13386        Detail Reference : PG  A-3

------------------------------ ADDITIONAL COMMENTS ------------------------------
OTHR = survey of utilities; includes tests
------------------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                      Data Record Number:  55

----------------------------NUCLARR-CALCULATED-RATES------------------------
    Median: 1.139E-002  Upper Tolerance: 1.980E-002  Aggregation Type: 1
    Mean  : 1.113E-002  Error Factor   : 1.737E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------
    Number of Failures   :     7        Number of Components  :     4
    Hours Per Component  : ------------ Demand Per Component  : --------
    Total Component Hours: ------------ Total Component Demand:    629

    Probability/Rate   : ------E----    Type         :
    Variance           : ------E----    Units        :
    Standard Deviation : ------E----    Distribution :

                          ---Lower---   ---Upper---   -Confidence/Coverage-
    Confidence Bounds  : ------E----    ------E----             -- %
    Tolerance Bounds   : ------E----    ------E----             -- %
          Error Factor : ------E----       Sided                -- %

----------------------------------------------------------------------------
  Component            1: 600 VAC - 8.24 kVAC (voltage range)
  Applications         2:
                       3:
----------------------------------------------------------------------------
                    Origin                       Record Type
  Failure Data :    PLNT       TSTR-ADLG-OTHR-   -   -   -   -   -   -
  Exposure Data:    PLNT       TSTR-ADLG-OTHR-   -   -   -   -   -   -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y         Originating Facilities : BEP -   -   -
  Nuclear Origin?  : Y         Failure Degree   :
  Bayesian Update? : N         Failure Severity : C
  IRADAP Suitable? : Y         Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y      Subsys. train : desig: 1, 2, 3, 4

-------------------------- REFERENCE INFORMATION ---------------------------
    Document Number : 13386       Detail Reference : PG. A-3

---------------------------- ADDITIONAL COMMENTS ---------------------------
  OTHR = survey of utilities; includes tests

----------------------------------------------------------------------------
```

```
         ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                         Data Record Number:  56

──────────────────────NUCLARR─CALCULATED─RATES──────────────────────────
   Median:  1.487E-002  Upper Tolerance:  3.739E-002  Aggregation Type: 1
   Mean  :  1.370E-002  Error Factor   :  2.515E+000

──────────────────────REFERENCE─RAW─and─PROBABILITY─DATA────────────────
   Number of Failures   :       2          Number of Components  :      2
   Hours Per Component  : ------------     Demand Per Component  : --------
   Total Component Hours: ------------     Total Component Demand:     146

   Probability/Rate   : ------E----        Type         :
   Variance           : ------E----        Units        :
   Standard Deviation : ------E----        Distribution :

                        ───Lower───    ───Upper───   -Confidence/Coverage-
   Confidence Bounds  : ------E----    ------E----             -- %
   Tolerance Bounds   : ------E----    ------E----             -- %
        Error Factor  : ------E----       Sided                -- %

────────────────────────────────────────────────────────────────────────
  Component         1: 600 VAC - 8.24 kVAC (voltage range)
  Applications      2:
                    3:
────────────────────────────────────────────────────────────────────────
                Origin                       Record Type
  Failure Data :  PLNT     TSTR-ADLG-OTHR-   -   -   -   -   -   -
  Exposure Data:  PLNT     TSTR-ADLG-OTHR-   -   -   -   -   -   -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y        Originating Facilities : BVS1-   -   -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : N        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y    Subsys. train : desig: 1-1, 1-2

──────────────────────── REFERENCE INFORMATION ─────────────────────────
   Document Number : 13386        Detail Reference : PG. A-3

───────────────────────── ADDITIONAL COMMENTS ──────────────────────────
  OTHR = survey of utilities; includes tests

────────────────────────────────────────────────────────────────────────
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

    Component: Generator, with Diesel Engine Driver
       Design: Generator
 Normal State: Normally Standby
 Failure Mode: Fails to Start                         Data Record Number:  57

──────────────────────────NUCLARR-CALCULATED-RATES────────────────────────────
   Median:  4.942E-003  Upper Tolerance:  1.623E-002  Aggregation Type: 1
   Mean  :  4.184E-003  Error Factor   :  3.284E+000

─────────────────────REFERENCE-RAW-and-PROBABILITY-DATA───────────────────────
   Number of Failures   :       1          Number of Components  :      2
   Hours Per Component  : ------------     Demand Per Component  : --------
   Total Component Hours: ------------     Total Component Demand:      239

   Probability/Rate   : ------E----        Type         :
   Variance           : ------E----        Units        :
   Standard Deviation : ------E----        Distribution :

                        ───Lower───     ───Upper───   -Confidence/Coverage-
   Confidence Bounds  : ------E----     ------E----             -- %
   Tolerance Bounds   : ------E----     ------E----             -- %
         Error Factor : ------E----        Sided                -- %
──────────────────────────────────────────────────────────────────────────────
 Component         1: 600 VAC - 8.24 kVAC (voltage range)
 Applications      2:
                   3:
──────────────────────────────────────────────────────────────────────────────
              Origin                        Record Type
 Failure Data :  PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -
 Exposure Data:  PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -

 Data Collection Period:  83 through 85 (YY through YY)

 Include Circuit? : Y        Originating Facilities : DAC1-    -    -
 Nuclear Origin?  : Y        Failure Degree    :
 Bayesian Update? : N        Failure Severity : C
 IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y    Subsys. train : desig: 16-21, 16-31

─────────────────────────── REFERENCE INFORMATION ────────────────────────────
    Document Number : 13386       Detail Reference : PG. A-3

──────────────────────────── ADDITIONAL COMMENTS ─────────────────────────────
 OTHR = survey of utilities; includes tests

──────────────────────────────────────────────────────────────────────────────
```

```
             ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

      Component: Generator, with Diesel Engine Driver
         Design: Generator
   Normal State: Normally Standby
   Failure Mode: Fails to Start                          Data Record Number:  58

--------------------------------NUCLARR-CALCULATED-RATES--------------------------
     Median:  4.688E-003  Upper Tolerance:  1.540E-002  Aggregation Type: 1
     Mean  :  3.968E-003  Error Factor    :  3.286E+000

----------------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
     Number of Failures    :       1        Number of Components  :      2
     Hours Per Component   : ------------   Demand Per Component  : --------
     Total Component Hours: ------------    Total Component Demand:     252

     Probability/Rate    : ------E----      Type         :
     Variance            : ------E----      Units        :
     Standard Deviation  : ------E----      Distribution :

                           ---Lower----    ---Upper----   -Confidence/Coverage-
     Confidence Bounds   : ------E----     ------E----               -- %
     Tolerance Bounds    : ------E----     ------E----               -- %
           Error Factor  : ------E----        Sided                  -- %

----------------------------------------------------------------------------------
   Component         1: 600 VAC - 8.24 kVAC (voltage range)
   Applications      2:
                     3:
----------------------------------------------------------------------------------
                  Origin                          Record Type
   Failure Data :  PLNT      TSTR-ADLG-OTHR-    -   -   -   -   -   -
   Exposure Data:  PLNT      TSTR-ADLG-OTHR-    -   -   -   -   -   -

   Data Collection Period:  83 through 85 (YY through YY)

   Include Circuit? : Y       Originating Facilities : ANO1-    -    -
   Nuclear Origin?  : Y       Failure Degree    :
   Bayesian Update? : N       Failure Severity : C
   IRADAP Suitable? : Y       Include System?  : I  Systems : EK-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : Y    Subsys. train : desig: 1A, 1B

---------------------------- REFERENCE INFORMATION -------------------------------
     Document Number : 13386        Detail Reference : PG. A-3

----------------------------- ADDITIONAL COMMENTS --------------------------------
   OTHR - survey of utilities; includes tests; mfg - GM; rating - 2750 KW

----------------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/04

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                          Data Record Number:  59

---------------------------NUCLARR-CALCULATED-RATES--------------------------
   Median:  1.044E-002  Upper Tolerance:  1.305E-002  Aggregation Type: 1
   Mean  : +0.000E+000  Error Factor    :  1.251E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
   Number of Failures    :      0        Number of Components  :       1
   Hours Per Component   : ------------  Demand Per Component  : --------
   Total Component Hours: ------------   Total Component Demand:      146

   Probability/Rate    : ------E----      Type         :
   Variance            : ------E----      Units        :
   Standard Deviation : ------E----      Distribution :

                        ----Lower----   ----Upper----   -Confidence/Coverage-
   Confidence Bounds  : ------E----     ------E----                -- %
   Tolerance Bounds   : ------E----     ------E----                -- %
        Error Factor : ------E----         Sided                   -- %

-----------------------------------------------------------------------------
  Component          1: 600 VAC - 8.24 kVAC (voltage range)
  Applications       2:
                     3:
-----------------------------------------------------------------------------
                 Origin                        Record Type
  Failure Data :  PLNT       TSTR-ADLG-OTHR-   -   -   -   -   -   -
  Exposure Data:  PLNT       TSTR-ADLG-OTHR-   -   -   -   -   -   -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y          Originating Facilities : EIH2-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : Y          Include System?   : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y    Subsys. train : desig: 2A, 2B, 2C
----------------------------- REFERENCE INFORMATION --------------------------
   Document Number : 13386        Detail Reference : PG. A-5
------------------------------ ADDITIONAL COMMENTS ---------------------------
  OTHR = survey of utilities; includes tests

-----------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                          Data Record Number:  60

---------------------------NUCLARR-CALCULATED-RATES---------------------------
   Median:  1.267E-002  Upper Tolerance:  2.552E-002  Aggregation Type: 1
   Mean  :  1.216E-002  Error Factor   :  2.015E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
   Number of Failures    :      4         Number of Components   :      1
   Hours Per Component   : ------------   Demand Per Component   : --------
   Total Component Hours: ------------    Total Component Demand:      329

   Probability/Rate    : ------E----      Type         :
   Variance            : ------E----      Units        :
   Standard Deviation : ------E----       Distribution :

                        ---Lower---     ---Upper---    -Confidence/Coverage-
   Confidence Bounds  : ------E----     ------E----              -- %
   Tolerance Bounds   : ------E----     ------E----              -- %
         Error Factor : ------E----        Sided                 -- %
------------------------------------------------------------------------------
  Component          1: 600 VAC - 8.24 kVAC (voltage range)
  Applications       2:
                     3:
------------------------------------------------------------------------------
                  Origin                          Record Type
  Failure Data :   PLNT       TSTR-ADLG-OTHR-   -   -   -   -   -   -
  Exposure Data:   PLNT       TSTR-ADLG-OTHR-   -   -   -   -   -   -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y        Originating Facilities : ZIS -    -    -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : N        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y     Subsys. train : desig: 0

------------------------------ REFERENCE INFORMATION --------------------------
    Document Number : 13386       Detail Reference : PG. A-11

------------------------------ ADDITIONAL COMMENTS ----------------------------
  OTHR = survey of utilities; includes tests

------------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

    Component: Generator, with Diesel Engine Driver
       Design: Generator
 Normal State: Normally Standby
 Failure Mode: Fails to Start                      Data Record Number:  61

 ----------------------NUCLARR-CALCULATED-RATES-----------------------------
   Median:  6.538E-003   Upper Tolerance:  1.443E-002   Aggregation Type: 1
   Mean  :  6.186E-003   Error Factor   :  2.207E+000

 -------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
   Number of Failures   :      3        Number of Components  :      2
   Hours Per Component  : ------------  Demand Per Component   : --------
   Total Component Hours: ------------  Total Component Demand:      485

   Probability/Rate   : ------E----     Type         :
   Variance           : ------E----     Units        :
   Standard Deviation : ------E----     Distribution :

                        ----Lower----   ----Upper----  -Confidence/Coverage-
   Confidence Bounds  : ------E----     ------E----              -- %
   Tolerance Bounds   : ------E----     ------E----              -- %
         Error Factor : ------E----        Sided                 -- %

 ---------------------------------------------------------------------------
 Component          1: 600 VAC - 8.24 kVAC (voltage range)
 Applications       2:
                    3:
 ---------------------------------------------------------------------------
                Origin                   Record Type
 Failure Data :  PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -
 Exposure Data:  PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -

 Data Collection Period:  83 through 85 (YY through YY)

 Include Circuit? : Y        Originating Facilities : ZIS2-   -   -
 Nuclear Origin?  : Y        Failure Degree    :
 Bayesian Update? : N        Failure Severity : C
 IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y    Subsys. train : desig: 2A, 2B

 ------------------------ REFERENCE INFORMATION ----------------------------
   Document Number : 13386       Detail Reference : PG. A-10,11

 ------------------------ ADDITIONAL COMMENTS ------------------------------
 OTHR = survey of utilities; includes tests

 ---------------------------------------------------------------------------
```

```
          ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                          Data Record Number:  62

---------------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  3.732E-003   Upper Tolerance:  4.646E-003   Aggregation Type: 1
    Mean   : +0.000E+000  Error Factor    :  1.245E+000

------------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures    :       0        Number of Components  :      2
    Hours Per Component   : ------------   Demand Per Component  : --------
    Total Component Hours: ------------    Total Component Demand:     412

    Probability/Rate     : ------E----     Type         :
    Variance             : ------E----     Units        :
    Standard Deviation   : ------E----     Distribution :

                            ---Lower---     ---Upper---   -Confidence/Coverage-
    Confidence Bounds    : ------E----     ------E----              -- %
    Tolerance Bounds     : ------E----     ------E----              -- %
          Error Factor   : ------E----        Sided                 -- %

--------------------------------------------------------------------------------
  Component            1: 600 VAC - 8.24 kVAC (voltage range)
  Applications         2:
                       3:
--------------------------------------------------------------------------------
                  Origin                            Record Type
  Failure Data :   PLNT        TSTR-ADLG-OTHR-   -    -    -    -    -    -
  Exposure Data:   PLNT        TSTR-ADLG-OTHR-   -    -    -    -    -    -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y        Originating Facilities : ZIS1-    -    -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : N        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y    Subsys. train : desig: 1A, 1B

------------------------- REFERENCE INFORMATION --------------------------------
    Document Number : 13386       Detail Reference : PG. A-10

------------------------- ADDITIONAL COMMENTS ----------------------------------
  OTHR = survey of utilities; includes tests

--------------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                      Data Record Number:  63

 ----------------------NUCLARR-CALCULATED-RATES-----------------------------
   Median:  1.485E-002  Upper Tolerance:  1.861E-002   Aggregation Type: 1
   Mean   : +0.000E+000  Error Factor   :  1.253E+000

 ------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
   Number of Failures    :       0       Number of Components  :      1
   Hours Per Component   : ------------  Demand Per Component  : --------
   Total Component Hours: ------------   Total Component Demand:     102

   Probability/Rate    : ------E----     Type         :
   Variance            : ------E----     Units        :
   Standard Deviation : ------E----      Distribution :

                         ----Lower----   ----Upper----  -Confidence/Coverage-
   Confidence Bounds   : ------E----     ------E----              -- %
   Tolerance Bounds    : ------E----     ------E----              -- %
         Error Factor : ------E----        Sided                  -- %

 ---------------------------------------------------------------------------
  Component           1: 600 VAC - 8.24 kVAC (voltage range)
  Applications        2:
                      3:
 ---------------------------------------------------------------------------
                 Origin                        Record Type
  Failure Data :  PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -
  Exposure Data:  PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y          Originating Facilities : LSC -    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y     Subsys. train : desig: 0
 ----------------------------- REFERENCE INFORMATION -----------------------
    Document Number : 13386        Detail Reference : PG. A-6
 ----------------------------- ADDITIONAL COMMENTS -------------------------
  OTHR = survey of utilities; includes tests

 ---------------------------------------------------------------------------
```

```
           ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

   Component: Generator, with Diesel Engine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Start                         Data Record Number:  64

-------------------------NUCLARR-CALCULATED-RATES------------------------------
  Median:  5.256E-003  Upper Tolerance:  4.343E-002  Aggregation Type: 1
  Mean  : +0.000E+000  Error Factor   :  8.264E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
  Number of Failures   :      0         Number of Components  :      1
  Hours Per Component  : ------------   Demand Per Component  : --------
  Total Component Hours: ------------   Total Component Demand:       43

  Probability/Rate   : ------E----      Type         :
  Variance           : ------E----      Units        :
  Standard Deviation : ------E----      Distribution :

                       ---Lower---   ---Upper---   -Confidence/Coverage-
  Confidence Bounds  : ------E----   ------E----              -- %
  Tolerance Bounds   : ------E----   ------E----              -- %
        Error Factor : ------E----      Sided                 -- %

-------------------------------------------------------------------------------
Component          1: 600 VAC - 8.24 kVAC (voltage range)
Applications       2:
                   3:
-------------------------------------------------------------------------------
                 Origin                      Record Type
Failure Data :    PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -
Exposure Data:    PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -

Data Collection Period:  84 through 85 (YY through YY)

Include Circuit? : Y         Originating Facilities : LSC2-    -    -
Nuclear Origin?  : Y         Failure Degree    :
Bayesian Update? : N         Failure Severity : C
IRADAP Suitable? : Y         Include System?  : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y     Subsys. train : desig: 2B

--------------------------- REFERENCE INFORMATION ------------------------------
   Document Number : 13386        Detail Reference : PG. A-6

---------------------------- ADDITIONAL COMMENTS -------------------------------
OTHR = survey of utilities; includes tests

-------------------------------------------------------------------------------
```

```
           ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

    Component: Generator, with Diesel Engine Driver
       Design: Generator
 Normal State: Normally Standby
 Failure Mode: Fails to Start                       Data Record Number:  65

-------------------------NUCLARR-CALCULATED-RATES-------------------------
   Median:  1.044E-002   Upper Tolerance:  1.305E-002   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  1.251E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------
   Number of Failures    :      0         Number of Components  :      1
   Hours Per Component   : ------------   Demand Per Component  : --------
   Total Component Hours: ------------    Total Component Demand:     146

   Probability/Rate   : ------E----       Type         :
   Variance           : ------E----       Units        :
   Standard Deviation : ------E----       Distribution :

                        ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds  : ------E----      ------E----             -- %
   Tolerance Bounds   : ------E----      ------E----             -- %
         Error Factor : ------E----        Sided                 -- %

--------------------------------------------------------------------------
 Component          1: 600 VAC - 8.24 kVAC (voltage range)
 Applications       2:
                    3:
--------------------------------------------------------------------------
                 Origin                      Record Type
 Failure Data :   PLNT     TSTR-ADLG-OTHR-   -    -    -    -    -    -
 Exposure Data:   PLNT     TSTR-ADLG-OTHR-   -    -    -    -    -    -

 Data Collection Period:  83 through 85 (YY through YY)

 Include Circuit? : Y          Originating Facilities : LSC2-    -    -
 Nuclear Origin?  : Y          Failure Degree    :
 Bayesian Update? : N          Failure Severity  : C
 IRADAP Suitable? : Y          Include System?  : I   Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y     Subsys. train : desig: 2A

--------------------------- REFERENCE INFORMATION ------------------------
   Document Number : 13386        Detail Reference : PG. A-6

---------------------------- ADDITIONAL COMMENTS -------------------------
 OTHR = survey of utilities; includes tests

--------------------------------------------------------------------------
```

```
          ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/04

      Component: Generator, with Diesel Engine Driver
         Design: Generator
   Normal State: Normally Standby
   Failure Mode: Fails to Start                     Data Record Number:  66

 ----------------------------NUCLARR-CALCULATED-RATES-------------------------
    Median:  5.394E-003  Upper Tolerance:  1.366E-002   Aggregation Type: 1
    Mean  :  4.963E-003  Error Factor   :  2.533E+000

 -----------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
    Number of Failures    :        2         Number of Components   :      3
    Hours Per Component   : ------------     Demand Per Component   : --------
    Total Component Hours: ------------      Total Component Demand:      403

    Probability/Rate    : ------E----        Type          :
    Variance            : ------E----        Units         :
    Standard Deviation  : ------E----        Distribution :

                          ---Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----     ------E----              -- %
    Tolerance Bounds    : ------E----     ------E----              -- %
          Error Factor  : ------E----        Sided                 -- %

 -----------------------------------------------------------------------------
   Component            1: 600 VAC - 8.24 kVAC (voltage range)
   Applications         2:
                        3:
 -----------------------------------------------------------------------------
                   Origin                        Record Type
   Failure Data :   PLNT      TSTR-ADLG-OTHR-    -   -   -   -   -   -
   Exposure Data:   PLNT      TSTR-ADLG-OTHR-    -   -   -   -   -   -

   Data Collection Period:  83 through 85 (YY through YY)

   Include Circuit? : Y        Originating Facilities : EIH2-    -    -
   Nuclear Origin?  : Y        Failure Degree    :
   Bayesian Update? : N        Failure Severity : C
   IRADAP Suitable? : Y        Include System?   : I  Systems : EK-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : Y     Subsys. train : desig: 2A, 2B, 2C
 --------------------------------- REFERENCE INFORMATION ---------------------
    Document Number : 13386        Detail Reference : PG. A-5
 --------------------------------- ADDITIONAL COMMENTS -----------------------
   OTHR = survey of utilities; includes tests

 -----------------------------------------------------------------------------
```

```
       ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

      Component: Generator, with Diesel Engine Driver
         Design: Generator
   Normal State: Normally Standby
   Failure Mode: Fails to Start                     Data Record Number:  67

--------------------------NUCLARR-CALCULATED-RATES--------------------------
    Median:  6.130E-003  Upper Tolerance:  7.652E-003  Aggregation Type: 1
    Mean  : +0.000E+000  Error Factor   :  1.248E+000

--------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures    :      0       Number of Components  :      2
    Hours Per Component   : ------------ Demand Per Component  : --------
    Total Component Hours: ------------  Total Component Demand:    250

    Probability/Rate    : ------E----    Type         :
    Variance            : ------E----    Units        :
    Standard Deviation  : ------E----    Distribution :

                          ---Lower---    ---Upper---   -Confidence/Coverage-
    Confidence Bounds   : ------E----    ------E----              -- %
    Tolerance Bounds    : ------E----    ------E----              -- %
          Error Factor  : ------E----       Sided                 -- %

----------------------------------------------------------------------------
  Component          1: 600 VAC - 8.24 kVAC (voltage range)
  Applications       2:
                     3:
----------------------------------------------------------------------------
                 Origin                     Record Type
  Failure Data :  PLNT      TSTR-ADLG-OTHR-    -   -   -   -   -   -
  Exposure Data:  PLNT      TSTR-ADLG-OTHR-    -   -   -   -   -   -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y        Originating Facilities : LSC1-   -   -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : N        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y    Subsys. train : desig: 1A, 1B

------------------------- REFERENCE INFORMATION ----------------------------
    Document Number : 13386       Detail Reference : PG. A-6

------------------------- ADDITIONAL COMMENTS ------------------------------
  OTHR = survey of utilities; includes tests

----------------------------------------------------------------------------
```

```
           ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/04

      Component: Generator, with Diesel Engine Driver
         Design: Generator
   Normal State: Normally Standby
   Failure Mode: Fails to Start                         Data Record Number:  68

---------------------------NUCLARR-CALCULATED-RATES----------------------------
     Median:  3.775E-003  Upper Tolerance:  1.241E-002  Aggregation Type: 1
     Mean  :  3.195E-003  Error Factor   :  3.289E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
     Number of Failures    :      1          Number of Components  :      3
     Hours Per Component   : ------------    Demand Per Component  : --------
     Total Component Hours: ------------     Total Component Demand:     313

     Probability/Rate   : ------E----        Type         :
     Variance           : ------E----        Units        :
     Standard Deviation : ------E----        Distribution :

                          ----Lower----    ----Upper----   -Confidence/Coverage-
     Confidence Bounds  : ------E----      ------E----               -- %
      Tolerance Bounds  : ------E----      ------E----               -- %
           Error Factor : ------E----         Sided                  -- %

-------------------------------------------------------------------------------
   Component            1: 600 VAC - 8.24 kVAC (voltage range)
   Applications         2:
                        3:
-------------------------------------------------------------------------------
                 Origin                         Record Type
   Failure Data :  PLNT       TSTR-ADLG-OTHR-   -    -    -    -    -    -
   Exposure Data:  PLNT       TSTR-ADLG-OTHR-   -    -    -    -    -    -

   Data Collection Period:  83 through 85 (YY through YY)

   Include Circuit? : Y          Originating Facilities : EIH1-    -    -
   Nuclear Origin?  : Y          Failure Degree    :
   Bayesian Update? : N          Failure Severity : C
   IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : Y     Subsys. train : desig: 1A, 1B, 1C
------------------------------ REFERENCE INFORMATION ---------------------------
     Document Number : 13386        Detail Reference : PG. A-5
------------------------------- ADDITIONAL COMMENTS ----------------------------
   OTHR = survey of utilities; includes tests

-------------------------------------------------------------------------------
```

```
          ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/09

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                      Data Record Number:  69

------------------------------NUCLARR-CALCULATED-RATES------------------------------
    Median:  1.471E-002   Upper Tolerance:  1.842E-002   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  1.253E+000

--------------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------------
    Number of Failures    :        0         Number of Components  :      1
    Hours Per Component   : ------------     Demand Per Component  : --------
    Total Component Hours: ------------      Total Component Demand:      103

    Probability/Rate    : ------E----        Type         :
    Variance            : ------E----        Units        :
    Standard Deviation : ------E----         Distribution :

                          ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----               -- %
    Tolerance Bounds    : ------E----      ------E----               -- %
          Error Factor : ------E----          Sided                  -- %

------------------------------------------------------------------------------------
  Component         1: 600 VAC - 8.24 kVAC (voltage range)
  Applications      2:
                    3:
------------------------------------------------------------------------------------
                 Origin                     Record Type
  Failure Data :  PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -
  Exposure Data:  PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y         Originating Facilities : DRS -    -    -
  Nuclear Origin?  : Y         Failure Degree    :
  Bayesian Update? : N         Failure Severity : C
  IRADAP Suitable? : Y         Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y     Subsys. train : desig: 2/3

------------------------------ REFERENCE INFORMATION ------------------------------
    Document Number : 13386       Detail Reference :

------------------------------- ADDITIONAL COMMENTS -------------------------------
  OTHR = survey of utilities; includes tests

------------------------------------------------------------------------------------
```

```
            ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                         Data Record Number:  70

------------------------------NUCLARR-CALCULATED-RATES------------------------------
   Median:  2.814E-003   Upper Tolerance:  9.270E-003   Aggregation Type: 1
   Mean  :  2.381E-003   Error Factor   :  3.294E+000

----------------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------------
   Number of Failures    :      1         Number of Components   :      1
   Hours Per Component   : ------------   Demand Per Component   : --------
   Total Component Hours: ------------    Total Component Demand:      420

   Probability/Rate    : ------E----      Type         :
   Variance            : ------E----      Units        :
   Standard Deviation  : ------E----      Distribution :

                          ---Lower---      ---Upper---    -Confidence/Coverage-
   Confidence Bounds   : ------E----      ------E----              -- %
   Tolerance Bounds    : ------E----      ------E----              -- %
         Error Factor  : ------E----         Sided                 -- %

--------------------------------------------------------------------------------
  Component           1: 600 VAC - 8.24 kVAC (voltage range)
  Applications        2:
                      3:
--------------------------------------------------------------------------------
                   Origin                        Record Type
  Failure Data :   PLNT       TSTR-ADLG-OTHR-    -   -   -   -   -   -
  Exposure Data:   PLNT       TSTR-ADLG-OTHR-    -   -   -   -   -   -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y        Originating Facilities : CCN2-    -    -
  Nuclear Origin?  : Y        Failure Degree    :
  Bayesian Update? : N        Failure Severity : C
  IRADAP Suitable? : Y        Include System?  : I   Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y    Subsys. train : desig: 21

------------------------------ REFERENCE INFORMATION ------------------------------
    Document Number : 13386        Detail Reference : PG. A-3

------------------------------ ADDITIONAL COMMENTS ------------------------------
  OTHR = survey of utilities; includes tests

--------------------------------------------------------------------------------
```

```
           ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                        Data Record Number:  71

 ---------------------------NUCLARR-CALCULATED-RATES-----------------------------
    Median:  2.244E-003  Upper Tolerance:  7.390E-003  Aggregation Type: 1
    Mean  :  1.898E-003  Error Factor   :  3.294E+000

 ------------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures    :       1          Number of Components  :      1
    Hours Per Component   : ------------     Demand Per Component  : --------
    Total Component Hours: ------------      Total Component Demand:      527

    Probability/Rate    : ------E----        Type         :
    Variance            : ------E----        Units        :
    Standard Deviation  : ------E----        Distribution :

                          ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----               -- %
    Tolerance Bounds    : ------E----      ------E----               -- %
          Error Factor  : ------E----         Sided                  -- %

 ---------------------------------------------------------------------------------
  Component          1: 600 VAC - 8.24 kVAC (voltage range)
  Applications       2:
                     3:
 ---------------------------------------------------------------------------------
                 Origin                          Record Type
  Failure Data :  PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -
  Exposure Data:  PLNT      TSTR-ADLG-OTHR-   -    -    -    -    -    -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y         Originating Facilities : CCN -    -    -
  Nuclear Origin?  : Y         Failure Degree    :
  Bayesian Update? : N         Failure Severity : C
  IRADAP Suitable? : Y         Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y    Subsys. train : desig: 12
 ----------------------------- REFERENCE INFORMATION -----------------------------
     Document Number : 13386       Detail Reference : PG. A-3
 ------------------------------ ADDITIONAL COMMENTS ------------------------------
  OTHR = survey of utilities; includes tests

 ---------------------------------------------------------------------------------
```

```
           ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                           Data Record Number:  72

----------------------------NUCLARR-CALCULATED-RATES----------------------------
   Median:  4.164E-003   Upper Tolerance:  5.192E-003   Aggregation Type: 1
   Mean   : +0.000E+000  Error Factor    :  1.247E+000

------------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
   Number of Failures    :       0        Number of Components  :       1
   Hours Per Component   : ------------   Demand Per Component  : --------
   Total Component Hours: ------------    Total Component Demand:      369

   Probability/Rate    : ------E----      Type         :
   Variance            : ------E----      Units        :
   Standard Deviation  : ------E----      Distribution :

                         ----Lower----   ----Upper----   -Confidence/Coverage-
   Confidence Bounds   : ------E----      ------E----              -- %
   Tolerance Bounds    : ------E----      ------E----              -- %
        Error Factor   : ------E----         Sided                 -- %

--------------------------------------------------------------------------------
 Component          1: 600 VAC - 8.24 kVAC (voltage range)
 Applications       2:
                    3:
--------------------------------------------------------------------------------
                 Origin                        Record Type
 Failure Data :   PLNT        TSTR-ADLG-OTHR-   -   -   -   -   -   -
 Exposure Data:   PLNT        TSTR-ADLG-OTHR-   -   -   -   -   -   -

 Data Collection Period:  83 through 85 (YY through YY)

 Include Circuit? : Y          Originating Facilities : CCN1-    -    -
 Nuclear Origin?  : Y          Failure Degree   :
 Bayesian Update? : N          Failure Severity : C
 IRADAP Suitable? : Y          Include System?  : I   Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y     Subsys. train : desig: 11

------------------------------ REFERENCE INFORMATION ---------------------------
   Document Number : 13386        Detail Reference : PG. A-3

------------------------------- ADDITIONAL COMMENTS ---------------------------
 OTHR = survey of utilities; includes tests

--------------------------------------------------------------------------------
```

```
          ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/03

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                          Data Record Number:  73

------------------------------NUCLARR-CALCULATED-RATES----------------------------
   Median:  2.842E-003   Upper Tolerance:  9.357E-003   Aggregation Type: 1
   Mean  :  2.404E-003   Error Factor   :  3.293E+000

---------------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
   Number of Failures    :       1        Number of Components  :      2
   Hours Per Component   : ------------   Demand Per Component  : --------
   Total Component Hours: ------------    Total Component Demand:      416

   Probability/Rate    : ------E----      Type         :
   Variance            : ------E----      Units        :
   Standard Deviation : ------E----       Distribution :

                         ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds   : ------E----      ------E----              -- %
   Tolerance Bounds    : ------E----      ------E----              -- %
        Error Factor : ------E----          Sided                  -- %

----------------------------------------------------------------------------------
  Component           1: 600 VAC - 8.24 kVAC (voltage range)
  Applications        2:
                      3:
----------------------------------------------------------------------------------
                   Origin                        Record Type
  Failure Data :    PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -
  Exposure Data:    PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y          Originating Facilities : ANO2-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : N          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y     Subsys. train : desig: 2A, 2B

---------------------------- REFERENCE INFORMATION -----------------------------
     Document Number : 13386        Detail Reference : PG. A-3

----------------------------- ADDITIONAL COMMENTS -----------------------------
  OTHR = survey of utilities; includes tests

----------------------------------------------------------------------------------
```

```
            ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/09

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                         Data Record Number:  74

--------------------------NUCLARR-CALCULATED-RATES------------------------------
    Median:  5.028E-003   Upper Tolerance:  1.650E-002   Aggregation Type: 1
    Mean  :  4.255E-003   Error Factor    :  3.282E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures    :       1        Number of Components  :      2
    Hours Per Component   : ------------   Demand Per Component  : --------
    Total Component Hours: ------------    Total Component Demand:      235

    Probability/Rate    : ------E----      Type          :
    Variance            : ------E----      Units         :
    Standard Deviation : ------E----       Distribution :

                          ---Lower---     ---Upper---    -Confidence/Coverage-
    Confidence Bounds   : ------E----     ------E----               -- %
    Tolerance Bounds    : ------E----     ------E----               -- %
          Error Factor : ------E----         Sided                  -- %

--------------------------------------------------------------------------------
  Component          1: 600 VAC - 8.24 kVAC (voltage range)
  Applications       2:
                     3:
--------------------------------------------------------------------------------
                   Origin                       Record Type
  Failure Data :   PLNT       TSTR-ADLG-OTHR-   -   -   -   -   -   -
  Exposure Data:   PLNT       TSTR-ADLG-OTHR-   -   -   -   -   -   -

  Data Collection Period:  83 through 85 (YY through YY)

  Include Circuit? : Y         Originating Facilities : PBH -    -    -
  Nuclear Origin?  : Y         Failure Degree    :
  Bayesian Update? : N         Failure Severity : C
  IRADAP Suitable? : Y         Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : Y     Subsys. train : desig: 601, 602

---------------------------- REFERENCE INFORMATION -----------------------------
    Document Number : 13386        Detail Reference : PG. A-8

---------------------------- ADDITIONAL COMMENTS -------------------------------
  OTHR = survey of utilities; includes tests

--------------------------------------------------------------------------------
```

```
             ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/09

    Component: Generator, with Diesel Engine Driver
       Design: Generator
 Normal State: Normally Standby
 Failure Mode: Fails to Start                           Data Record Number:  75

------------------------------NUCLARR-CALCULATED-RATES------------------------------
   Median:  4.475E-003   Upper Tolerance:  1.470E-002   Aggregation Type: 1
   Mean  :  3.788E-003   Error Factor   :  3.286E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------------
   Number of Failures   :      1         Number of Components  :      2
   Hours Per Component  : ------------   Demand Per Component  : --------
   Total Component Hours: ------------   Total Component Demand:      264

   Probability/Rate    : ------E----     Type         :
   Variance            : ------E----     Units        :
   Standard Deviation  : ------E----     Distribution :

                        ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds   : ------E----     ------E----              -- %
   Tolerance Bounds    : ------E----     ------E----              -- %
         Error Factor  : ------E----        Sided                 -- %

-----------------------------------------------------------------------------------
 Component           1: 600 VAC - 8.24 kVAC (voltage range)
 Applications        2:
                     3:
-----------------------------------------------------------------------------------
                  Origin                         Record Type
 Failure Data :   PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -
 Exposure Data:   PLNT      TSTR-ADLG-OTHR-    -    -    -    -    -    -

 Data Collection Period:  83 through 85 (YY through YY)

 Include Circuit? : Y          Originating Facilities : PIN -    -    -
 Nuclear Origin?  : Y          Failure Degree     :
 Bayesian Update? : N          Failure Severity : C
 IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y     Subsys. train : desig: 1, 2

------------------------------ REFERENCE INFORMATION ------------------------------
   Document Number : 13386       Detail Reference : PG. A-8

------------------------------- ADDITIONAL COMMENTS -------------------------------
 OTHR = survey of utilities; includes tests

-----------------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/09

  Component: Generator, with Diesel Engine Driver
     Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Start                          Data Record Number:  76

-----------------------NUCLARR-CALCULATED-RATES---------------------------
   Median:  6.248E-003  Upper Tolerance:  2.048E-002  Aggregation Type: 1
   Mean  :  5.291E-003  Error Factor   :  3.278E+000

-------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
   Number of Failures     :      1       Number of Components  :      3
   Hours Per Component    : ------------ Demand Per Component  : --------
   Total Component Hours: ------------   Total Component Demand:     189

   Probability/Rate   : ------E----      Type         :
   Variance           : ------E----      Units        :
   Standard Deviation : ------E----      Distribution :

                        ---Lower---      ---Upper---    -Confidence/Coverage-
   Confidence Bounds  : ------E----      ------E----              -- %
   Tolerance Bounds   : ------E----      ------E----              -- %
         Error Factor : ------E----         Sided                 -- %

---------------------------------------------------------------------------
Component           1: 600 VAC - 8.24 kVAC (voltage range)
Applications        2:
                    3:
---------------------------------------------------------------------------
                 Origin                          Record Type
Failure Data :    PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -
Exposure Data:    PLNT      TSTR-ADLG-OTHR-   -   -   -   -   -   -

Data Collection Period:  83 through 85 (YY through YY)

Include Circuit? : Y        Originating Facilities : SPS -    -    -
Nuclear Origin?  : Y        Failure Degree     :
Bayesian Update? : N        Failure Severity : C
IRADAP Suitable? : Y        Include System?  : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y     Subsys. train : desig: 1, 2, 3

--------------------------- REFERENCE INFORMATION -------------------------
   Document Number : 13386      Detail Reference : PG. A-9
--------------------------- ADDITIONAL COMMENTS ---------------------------
OTHR = survey of utilities; includes tests

---------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1987/12/09

Component: Generator, with Diesel Engine Driver
Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Start
Data Record Number: 77

NUCLARR-CALCULATED-RATES

Median: 7.790E-003   Upper Tolerance: 1.719E-002   Aggregation Type: 1
Mean : 7.371E-003   Error Factor : 2.207E+000

REFERENCE-RAW-and-PROBABILITY-DATA

Number of Failures	3	Number of Components	2
Hours Per Component	------------	Demand Per Component	--------
Total Component Hours	------------	Total Component Demand	407

Probability/Rate	------E----	Type	
Variance	------E----	Units	
Standard Deviation	------E----	Distribution	

	Lower	Upper	Confidence/Coverage
Confidence Bounds	------E----	------E----	-- %
Tolerance Bounds	------E----	------E----	-- %
Error Factor	------E----	Sided	-- %

Component Applications
1: 600 VAC - 8.24 kVAC (voltage range)
2:
3:

	Origin	Record Type
Failure Data :	PLNT	TSTR-ADLG-OTHR- - - - - - -
Exposure Data:	PLNT	TSTR-ADLG-OTHR- - - - - - -

Data Collection Period: 83 through 85 (YY through YY)

Include Circuit? : Y   Originating Facilities : TPS - - -
Nuclear Origin? : Y   Failure Degree :
Bayesian Update? : N   Failure Severity : C
IRADAP Suitable? : Y   Include System? : I   Systems : EK- - - -
Safety Grade? : Y
Primary Failure? : Y   Subsys. train : desig: A, B

REFERENCE INFORMATION

Document Number : 13386   Detail Reference : PG. A-10

ADDITIONAL COMMENTS

OTHR = survey of utilities; includes tests

```
       ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Generator, with Diesel Engine Driver
         Design: Generator
   Normal State: Normally Standby
   Failure Mode: Fails to Start                     Data Record Number:  78

-----------------------NUCLARR-CALCULATED-RATES---------------------------
    Median:  1.818E-002   Upper Tolerance:  2.600E-002   Aggregation Type: 1
    Mean  :  1.794E-002   Error Factor    :  1.430E+000

--------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
    Number of Failures    :      12        Number of Components   : ------
    Hours Per Component   : ------------   Demand Per Component   : --------
    Total Component Hours: ------------    Total Component Demand:      669

    Probability/Rate    :  1.790E-002      Type         : MEAN
    Variance            : ------E----      Units        : F/D
    Standard Deviation : ------E----       Distribution : BINOM

                          ----Lower----     ----Upper----   -Confidence/Coverage-
    Confidence Bounds   :  9.500E-003       2.600E-002            90 %
    Tolerance Bounds    : ------E----      ------E----            -- %
           Error Factor : ------E----         Sided               -- %

--------------------------------------------------------------------------
   Component          1: Voltage Level Unknown - AC
   Applications       2:
                      3:
--------------------------------------------------------------------------
                    Origin                      Record Type
   Failure Data :    PLNT      PMLG-CRLB-SURV-LERS-DEVR-OTHR-    -    -    -
   Exposure Data:    PLNT      CRLB-SURV-   -    -    -    -    -    -    -

   Data Collection Period:  70 through 79 (YY through YY)

   Include Circuit? : U        Originating Facilities : BRP1-    -    -
   Nuclear Origin?  : Y        Failure Degree    :
   Bayesian Update? : N        Failure Severity : C
   IRADAP Suitable? : Y        Include System?  : I   Systems : EK-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : U    Subsys. train :

------------------------- REFERENCE INFORMATION --------------------------
    Document Number : 20081      Detail Reference : III-10

-------------------------- ADDITIONAL COMMENTS ---------------------------
   FAILRECTYP-OTHR-PLANT REVIEW COMM. MTG. MINUTES & NRC CORRESP.

--------------------------------------------------------------------------
```

```
               ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                             Data Record Number:  79

---------------------------NUCLARR-CALCULATED-RATES---    ----------------------
    Median:  4.864E-003   Upper Tolerance:  1.080E-002   Aggregation Type: 1
    Mean  :  4.601E-003   Error Factor   :  2.220E+000

------------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures    :       3         Number of Components  : ------
    Hours Per Component   : ------------    Demand Per Component  : --------
    Total Component Hours: ------------     Total Component Demand:      652

    Probability/Rate   :  6.710E-003        Type         : MEAN
    Variance           :  9.560E-006        Units        : F/D
    Standard Deviation : ------E----        Distribution : BETA

                       ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds  : ------E----      1.080E-002              95 %
    Tolerance Bounds   : ------E----     ------E----              -- %
          Error Factor : ------E----        Sided                 -- %

---------------------------------------------------------------------------------
  Component          1: Voltage level Unknown - AC
  Applications       2:
                     3:
---------------------------------------------------------------------------------
                Origin                       Record Type
  Failure Data :  PLNT      UTDB-LERS-PMLG-SSLB-    -    -    -    -    -
  Exposure Data:  PLNT      DCCN-PMTR-RHLG-ADLG-    -    -    -    -    -

  Data Collection Period:  71 through 84 (YY through YY)

  Include Circuit? : U         Originating Facilities : MNS1-    -    -
  Nuclear Origin?  : Y         Failure Degree    :
  Bayesian Update? : Y         Failure Severity : C
  IRADAP Suitable? : Y         Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : U    Subsys. train :

---------------------------- REFERENCE INFORMATION ------------------------------
     Document Number : 21185        Detail Reference : 3.1-6,13

---------------------------- ADDITIONAL COMMENTS --------------------------------

---------------------------------------------------------------------------------
```

```
           ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Generator, with Diesel Engine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                          Data Record Number:  80

-------------------------NUCLARR-CALCULATED-RATES-------------------------------
   Median:  3.388E-003   Upper Tolerance:  8.603E-003   Aggregation Type: 1
   Mean  :  3.115E-003   Error Factor   :  2.540E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
   Number of Failures   :      2          Number of Components  : ------
   Hours Per Component  : ------------    Demand Per Component  : --------
   Total Component Hours: ------------    Total Component Demand:      642

   Probability/Rate   :  5.350E-003       Type         : MEAN
   Variance           :  7.740E-006       Units        : F/D
   Standard Deviation : ------E----       Distribution : BETA

                        ---Lower---    ---Upper---    -Confidence/Coverage-
   Confidence Bounds  : ------E----    ------E----              -- %
   Tolerance Bounds   : ------E----    ------E----              -- %
        Error Factor  : ------E----       Sided                 -- %

--------------------------------------------------------------------------------
 Component           1: Voltage level Unknown - AC
 Applications        2:
                     3:
--------------------------------------------------------------------------------
                Origin                     Record Type
 Failure Data :  PLNT      UTDB-LERS-INCD-MOPR-    -    -    -    -    -
 Exposure Data:  PLNT      SSLB-SURV-JOBO-PMWR-    -    -    -    -    -

 Data Collection Period:  74 through 83 (YY through YY)

 Include Circuit? : U         Originating Facilities : HNP1-    -    -
 Nuclear Origin?  : Y         Failure Degree    :
 Bayesian Update? : Y         Failure Severity  : C
 IRADAP Suitable? : Y         Include System?   : I  Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : U     Subsys. train :

---------------------------- REFERENCE INFORMATION -----------------------------
   Document Number : 20585       Detail Reference : 4.1-5,11

----------------------------- ADDITIONAL COMMENTS ------------------------------


--------------------------------------------------------------------------------
```

```
            ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Generator, with Diesel Engine Driver
         Design: Unknown
   Normal State: Normally Standby
   Failure Mode: Fails to Run                         Data Record Number:   1

-----------------------NUCLARR-CALCULATED-RATES---------------------------
     Median:  4.606E-003   Upper Tolerance:  8.340E-003   Aggregation Type: 1
     Mean  :  4.478E-003   Error Factor    :  1.811E+000

---------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------
     Number of Failures    :      6       Number of Components  : ------
     Hours Per Component   : ------------ Demand Per Component  : --------
     Total Component Hours:          1340 Total Component Demand: --------

     Probability/Rate    :  5.970E-003     Type          : MEAN
     Variance            :  4.050E-006     Units         : F/H
     Standard Deviation : ------E----      Distribution : DISCRETE

                          ----Lower----    ----Upper----  -Confidence/Coverage-
     Confidence Bounds  : ------E----      ------E----               -- %
     Tolerance Bounds   : ------E----      ------E----               -- %
           Error Factor : ------E----         Sided                  -- %
--------------------------------------------------------------------------
   Component          1: Voltage level Unknown - AC
   Applications       2:
                      3:
--------------------------------------------------------------------------
                   Origin                    Record Type
   Failure Data :   PLNT        LERS-CRLB-PMLG-PMTR-DEVR-   -   -   -   -
   Exposure Data:   PLNT        MOPR-TSTR-   -   -   -   -   -   -   -   -

   Data Collection Period:  73 through 79 (YY through YY)

   Include Circuit? : U        Originating Facilities : ZIS1-ZIS2-    -
   Nuclear Origin?  : Y        Failure Degree    :
   Bayesian Update? : Y        Failure Severity : C
   IRADAP Suitable? : Y        Include System?   : I  Systems : EK-  -  -  -
   Safety Grade?    : Y
   Primary Failure? : U     Subsys. train :
------------------------ REFERENCE INFORMATION ---------------------------
      Document Number : 21381        Detail Reference : 1.5-74
------------------------- ADDITIONAL COMMENTS ----------------------------

--------------------------------------------------------------------------
```

```
      ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Generator, with Diesel Engine Driver
      Design: Unknown
Normal State: Normally Standby
Failure Mode: Fails to Run                          Data Record Number:   2

-----------------------------NUCLARR-CALCULATED-RATES-------------------------------
  Median:  1.153E-003   Upper Tolerance:  9.184E-003   Aggregation Type: 1
  Mean  : +0.000E+000   Error Factor   :  7.964E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------------
  Number of Failures   :       0          Number of Components  : ------
  Hours Per Component  : ------------     Demand Per Component  : --------
  Total Component Hours:           204    Total Component Demand: --------

  Probability/Rate    :  9.370E-004       Type          : MEAN
  Variance            :  3.370E-006       Units         : F/H
  Standard Deviation  : ------E----       Distribution  : DISCRETE

                         ----Lower----   ----Upper----   -Confidence/Coverage-
  Confidence Bounds   : ------E----      ------E----               -- %
  Tolerance Bounds    : ------E----      ------E----               -- %
        Error Factor  : ------E----         Sided                  -- %
------------------------------------------------------------------------------------
Component          1: Voltage level Unknown - AC
Applications       2:
                   3:
------------------------------------------------------------------------------------
                 Origin                   Record Type
Failure Data :    PLNT      LERS-CRLB-PMLG-PMTR-SOCR-    -    -    -    -
Exposure Data:    PLNT      MOPR-TSTR-   -    -    -    -    -    -    -

Data Collection Period:  73 through 79 (YY through YY)

Include Circuit? : U          Originating Facilities : IPS2-    -    -
Nuclear Origin?  : Y          Failure Degree    :
Bayesian Update? : Y          Failure Severity  : C
IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : Y    Subsys. train :
----------------------------- REFERENCE INFORMATION ---------------------------------
  Document Number : 20982        Detail Reference : 1.5-62
------------------------------- ADDITIONAL COMMENTS ---------------------------------

------------------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

    Component: Generator, with Diesel Engine Driver
       Design: Unknown
 Normal State: Normally Standby
 Failure Mode: Fails to Start                        Data Record Number:   1

-----------------------------NUCLARR-CALCULATED-RATES---------------------------
   Median:  1.782E-002  Upper Tolerance:  2.379E-002  Aggregation Type: 1
   Mean  :  1.772E-002  Error Factor   :  1.335E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
   Number of Failures    :     30          Number of Components  : ------
   Hours Per Component   : ------------    Demand Per Component  : --------
   Total Component Hours: ------------    Total Component Demand:      1693

   Probability/Rate    :  1.820E-002       Type          : MEAN
   Variance            :  1.260E-005       Units         : F/D
   Standard Deviation : ------E----        Distribution : DISCRETE

                         ---Lower---     ---Upper---   -Confidence/Coverage-
   Confidence Bounds  : ------E----     ------E----               -- %
   Tolerance Bounds   : ------E----     ------E----               -- %
         Error Factor : ------E----        Sided                  -- %
--------------------------------------------------------------------------------
 Component          1: Voltage level Unknown - AC
 Applications       2:
                    3:
--------------------------------------------------------------------------------
                 Origin                      Record Type
 Failure Data :   PLNT      LERS-CRLB-PMLG-PMTR-DEVR-    -    -    -    -
 Exposure Data:   PLNT      TSTR-    -    -    -    -    -    -    -    -

 Data Collection Period:  73 through 79 (YY through YY)

 Include Circuit? : U          Originating Facilities : ZIS1-ZIS2-    -
 Nuclear Origin?  : Y          Failure Degree    :
 Bayesian Update? : Y          Failure Severity : C
 IRADAP Suitable? : Y          Include System?   : I  Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : U    Subsys. train :
----------------------------- REFERENCE INFORMATION ----------------------------
   Document Number : 21381       Detail Reference : 1.5-74
----------------------------- ADDITIONAL COMMENTS ------------------------------

--------------------------------------------------------------------------------
```

```
          ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

    Component: Generator, with Diesel Engine Driver
       Design: Unknown
 Normal State: Normally Standby
 Failure Mode: Fails to Start                          Data Record Number:   2

------------------------------NUCLARR-CALCULATED-RATES------------------------------
   Median:  9.830E-003  Upper Tolerance:  1.983E-002  Aggregation Type: 1
   Mean  :  9.434E-003  Error Factor    :  2.017E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
   Number of Failures    :      4        Number of Components   : ------
   Hours Per Component   : ------------  Demand Per Component   : --------
   Total Component Hours: ------------   Total Component Demand:      424

   Probability/Rate   :  1.290E-002      Type          : MEAN
   Variance           :  4.150E-005      Units         : F/D
   Standard Deviation : ------E----      Distribution  : DISCRETE

                        ----Lower----   ----Upper----   -Confidence/Coverage-
   Confidence Bounds  : ------E----     ------E----                  -- %
   Tolerance Bounds   : ------E----     ------E----                  -- %
         Error Factor : ------E----        Sided                     -- %

------------------------------------------------------------------------------------
 Component          1: Voltage level Unknown - AC
 Applications       2:
                    3:
------------------------------------------------------------------------------------
                  Origin                      Record Type
 Failure Data :   PLNT       LERS-CRLB-PMLG-PMTR-SOCR-    -    -    -    -
 Exposure Data:   PLNT       TSTR-    -    -    -    -    -    -    -    -

 Data Collection Period:  73 through 79 (YY through YY)

 Include Circuit? : U          Originating Facilities : IPS2-    -    -
 Nuclear Origin?  : Y          Failure Degree    :
 Bayesian Update? : Y          Failure Severity : C
 IRADAP Suitable? : Y          Include System?   : I  Systems : EK-  -  -  -
 Safety Grade?    : Y
 Primary Failure? : Y     Subsys. train :
------------------------------ REFERENCE INFORMATION -------------------------------
   Document Number : 20982       Detail Reference : 1.5-62
------------------------------- ADDITIONAL COMMENTS --------------------------------

------------------------------------------------------------------------------------
```

```
        ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Generator, with Hydro Turbine Driver
        Design: Generator
  Normal State: Normally Standby
  Failure Mode: Fails to Start                      Data Record Number:   1

--------------------------NUCLARR-CALCULATED-RATES------------------------------
    Median:  2.986E-003   Upper Tolerance:  4.642E-003   Aggregation Type: 1
    Mean  :  2.943E-003   Error Factor   :  1.555E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------------
    Number of Failures    :     12          Number of Components  : ------
    Hours Per Component   : ------------    Demand Per Component  : --------
    Total Component Hours: ------------     Total Component Demand:      4077

    Probability/Rate    :  1.900E-003       Type          : MEDIAN
    Variance            :  1.200E-006       Units         : F/D
    Standard Deviation : ------E----        Distribution : DISCRETE

                        ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----               -- %
    Tolerance Bounds    :  1.100E-003      3.800E-003                90 %
          Error Factor : ------E----          Sided                  -- %

--------------------------------------------------------------------------------
  Component          1: Voltage level Unknown (Unknown VAC/VDC)
  Applications       2:
                     3:
--------------------------------------------------------------------------------
                   Origin                          Record Type
  Failure Data :    PLNT       PMWR-LERS-INCD-    -    -    -    -    -    -
  Exposure Data:    PLNT       TSTR-PMTR-CRLB-    -    -    -    -    -    -

  Data Collection Period:  75 through 80 (YY through YY)

  Include Circuit? : U         Originating Facilities : NEE3-    -    -
  Nuclear Origin?  : Y         Failure Degree    :
  Bayesian Update? : Y         Failure Severity : C
  IRADAP Suitable? : Y         Include System?  : I  Systems : EK-  -  -  -
  Safety Grade?    : Y
  Primary Failure? : U     Subsys. train :
----------------------------- REFERENCE INFORMATION ----------------------------
     Document Number : 21281       Detail Reference : 5-23
----------------------------- ADDITIONAL COMMENTS ------------------------------
  MEAN = 2.9E-03/D

--------------------------------------------------------------------------------
```

```
            ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Generator, with Gas Turbine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Run                           Data Record Number:   1

-------------------------NUCLARR-CALCULATED-RATES-------------------------
  Median:  2.090E-004   Upper Tolerance:  6.860E-004   Aggregation Type: 1
  Mean  :  1.755E-004   Error Factor   :  3.282E+000

--------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
  Number of Failures    :      1       Number of Components    : ------
  Hours Per Component   : ------------ Demand Per Component    : --------
  Total Component Hours:          5697 Total Component Demand: --------

  Probability/Rate    :  1.970E-003    Type         : MEAN
  Variance            :  3.340E-006    Units        : F/H
  Standard Deviation : ------E----     Distribution : GAMMA

                       ----Lower----   ----Upper----  -Confidence/Coverage-
  Confidence Bounds   : ------E----     6.860E-004            95 %
  Tolerance Bounds    : ------E----    ------E----            -- %
        Error Factor : ------E----        Sided               -- %

--------------------------------------------------------------------------
Component            1: Voltage level Unknown - AC
Applications         2:
                     3:
--------------------------------------------------------------------------
                 Origin                    Record Type
Failure Data :    PLNT      UTDB-LERS-PMLG-SSLB-   -    -    -    -    -
Exposure Data:    PLNT      DCCN-ADLG-PMTR-RHLG-   -    -    -    -    -

Data Collection Period:  71 through 84 (YY through YY)

Include Circuit? : U       Originating Facilities : MNS1-   -   -
Nuclear Origin?  : Y       Failure Degree    :
Bayesian Update? : Y       Failure Severity : C
IRADAP Suitable? : Y       Include System?  : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : U    Subsys. train :
------------------------- REFERENCE INFORMATION --------------------------
   Document Number : 21185      Detail Reference : 3.1-7,13
-------------------------- ADDITIONAL COMMENTS ---------------------------

--------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

```
   Component: Generator, with Gas Turbine Driver
      Design: Generator
Normal State: Normally Standby
Failure Mode: Fails to Start                          Data Record Number:   1

-----------------------------NUCLARR-CALCULATED-RATES-----------------------------
  Median:  3.377E-002  Upper Tolerance:  3.640E-002  Aggregation Type: 1
  Mean  :  3.357E-002  Error Factor   :  1.078E+000

------------------------REFERENCE-RAW-and-PROBABILITY-DATA------------------------
  Number of Failures   :     28         Number of Components  : ------
  Hours Per Component  : ------------   Demand Per Component  : --------
  Total Component Hours: ------------   Total Component Demand:      834

  Probability/Rate   :  4.800E-002      Type          : MEAN
  Variance           :  3.110E-003      Units         : F/D
  Standard Deviation : ------E----      Distribution  : BETA

                      ----Lower----   ----Upper----  -Confidence/Coverage-
  Confidence Bounds  : ------E----     3.640E-002             95 %
  Tolerance Bounds   : ------E----    ------E----             -- %
        Error Factor : ------E----        Sided               -- %

----------------------------------------------------------------------------------
Component          1: Voltage level Unknown - AC
Applications       2:
                   3:
----------------------------------------------------------------------------------
               Origin                           Record Type
Failure Data :  PLNT     UTDB-LERS-PMLG-SSLB-    -    -    -    -    -
Exposure Data:  PLNT     DCCN-ADLG-PMTR-RHLG-    -    -    -    -    -

Data Collection Period:  71 through 84 (YY through YY)

Include Circuit? : U          Originating Facilities : MNS1-    -    -
Nuclear Origin?  : Y          Failure Degree   :
Bayesian Update? : Y          Failure Severity : C
IRADAP Suitable? : Y          Include System?  : I  Systems : EK-  -  -  -
Safety Grade?    : Y
Primary Failure? : U     Subsys. train :

------------------------------ REFERENCE INFORMATION ------------------------------
   Document Number : 21185        Detail Reference : 3.1-6,13

------------------------------- ADDITIONAL COMMENTS -------------------------------

----------------------------------------------------------------------------------
```

```
         ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Power Electronics (Solid-state)
      Design: Inverter (except motor controllers)
Normal State: Normally Energized
Failure Mode: Fails to Operate                      Data Record Number:   1

------------------------NUCLARR-CALCULATED-RATES----------------------------
  Median:  2.721E-005  Upper Tolerance:  4.471E-005   Aggregation Type: 1
  Mean  :  2.671E-005  Error Factor    :  1.643E+000

---------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
  Number of Failures    :      9         Number of Components  : ------
  Hours Per Component   : ------------   Demand Per Component  : --------
  Total Component Hours:        337000   Total Component Demand: --------

  Probability/Rate    :  4.000E-005      Type         : MEDIAN
  Variance            :  1.300E-010      Units        : F/H
  Standard Deviation : ------E----       Distribution : DISCRETE

                       ----Lower----   ----Upper----  -Confidence/Coverage-
  Confidence Bounds  : ------E----     ------E----             -- %
  Tolerance Bounds   :  4.900E-006      4.800E-005             90 %
        Error Factor : ------E----        Sided                -- %

----------------------------------------------------------------------------
Component          1: Unknown Instrumentation
Applications       2:
                   3:
----------------------------------------------------------------------------
              Origin                           Record Type
Failure Data :  PLNT      PMWR-LERS-INCD-    -    -    -    -    -    -
Exposure Data:  PLNT      TSTR-PMTR-CRLB-    -    -    -    -    -    -

Data Collection Period:  75 through 80 (YY through YY)

Include Circuit? : U         Originating Facilities : NEE3-    -    -
Nuclear Origin?  : Y         Failure Degree    :
Bayesian Update? : Y         Failure Severity : C
IRADAP Suitable? : Y         Include System?  : I  Systems : ZZ-  -  -  -
Safety Grade?    : U
Primary Failure? : U     Subsys. train :
-------------------------- REFERENCE INFORMATION ---------------------------
  Document Number : 21281       Detail Reference : 5-22
--------------------------- ADDITIONAL COMMENTS ----------------------------
MEAN = 4.30E-05/H

----------------------------------------------------------------------------
```

```
         ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Power Electronics (Solid-state)
      Design: Inverter (except motor controllers)
Normal State: Normally Energized
Failure Mode: Fails to Operate                   Data Record Number:   2

────────────────────────NUCLARR-CALCULATED-RATES────────────────────────
  Median:  1.045E-005  Upper Tolerance:  2.310E-005  Aggregation Type: 1
  Mean  :  9.868E-006  Error Factor   :  2.211E+000

────────────────────REFERENCE-RAW-and-PROBABILITY-DATA───────────────────
  Number of Failures    :      3         Number of Components  : ------
  Hours Per Component   : ------------   Demand Per Component  : --------
  Total Component Hours:       304000    Total Component Demand: --------

  Probability/Rate   :  1.090E-005       Type          : MEAN
  Variance           :  3.040E-012       Units         : F/H
  Standard Deviation : ------E----       Distribution  : DISCRETE

                      ───Lower───    ───Upper───   -Confidence/Coverage-
  Confidence Bounds  : ------E----    ------E----              -- %
  Tolerance Bounds   : ------E----    ------E----              -- %
        Error Factor : ------E----       Sided                 -- %

─────────────────────────────────────────────────────────────────────────
Component          1: Unknown Instrumentation
Applications       2: Voltage level Unknown - AC
                   3:
─────────────────────────────────────────────────────────────────────────
               Origin                  Record Type
Failure Data :  PLNT     LERS-CRLB-PMLG-PMTR-DEVR-    -    -    -    -
Exposure Data:  PLNT     MOPR-TSTR-   -    -    -    -    -    -    -

Data Collection Period:  73 through 79 (YY through YY)

Include Circuit? : U         Originating Facilities : ZIS1-ZIS2-    -
Nuclear Origin?  : Y         Failure Degree   :
Bayesian Update? : Y         Failure Severity : C
IRADAP Suitable? : Y         Include System?  : I  Systems : EA-EC-  -  -
Safety Grade?    : U
Primary Failure? : U     Subsys. train :

────────────────────── REFERENCE INFORMATION ────────────────────────────
   Document Number : 21391       Detail Reference : 1.5-75
─────────────────────── ADDITIONAL COMMENTS ─────────────────────────────


─────────────────────────────────────────────────────────────────────────
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

```
  Component: Power Electronics (Solid-state)
     Design: Inverter (except motor controllers)
Normal State: Normally Energized
Failure Mode: Fails to Operate                       Data Record Number:  3

──────────────────────────NUCLARR-CALCULATED-RATES──────────────────────────
  Median:  1.243E-005   Upper Tolerance:  4.058E-005   Aggregation Type: 1
  Mean  :  1.044E-005   Error Factor   :  3.265E+000

────────────────────REFERENCE-RAW-and-PROBABILITY-DATA──────────────────────
  Number of Failures    :      1        Number of Components  : ------
  Hours Per Component   : ------------  Demand Per Component  : --------
  Total Component Hours:         95800  Total Component Demand: --------

  Probability/Rate  :  1.550E-005       Type          : MEAN
  Variance          :  2.200E-010       Units         : F/H
  Standard Deviation : ------E----      Distribution  : DISCRETE

                     ───Lower───     ───Upper───    -Confidence/Coverage-
  Confidence Bounds  : ------E----     ------E----              -- %
  Tolerance Bounds   : ------E----     ------E----              -- %
       Error Factor  : ------E----        Sided                 -- %

────────────────────────────────────────────────────────────────────────────
Component            1: Unknown Instrumentation
Applications         2: Voltage level Unknown - AC
                     3:
────────────────────────────────────────────────────────────────────────────
                Origin                 Record Type
Failure Data :   PLNT      LERS-CRLB-PMLG-PMTR-SOCR-    -    -    -    -
Exposure Data:   PLNT      MOPR-TSTR-   -    -    -    -    -    -    -

Data Collection Period:  73 through 79 (YY through YY)

Include Circuit? : U        Originating Facilities : IPS2-    -    -
Nuclear Origin?  : Y        Failure Degree    :
Bayesian Update? : Y        Failure Severity : C
IRADAP Suitable? : Y        Include System?  : I  Systems : EX-  -  -  -
Safety Grade?    : U
Primary Failure? : Y     Subsys. train :

─────────────────────────── REFERENCE INFORMATION ──────────────────────────
  Document Number : 20982        Detail Reference : 1.5-63

─────────────────────────── ADDITIONAL COMMENTS ────────────────────────────

────────────────────────────────────────────────────────────────────────────
```

```
          ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Power Electronics (Solid-state)
        Design: Inverter (except motor controllers)
  Normal State: Normally Energized
  Failure Mode: Fails to Operate                    Data Record Number:   4

 ---------------------------NUCLARR-CALCULATED-RATES-------------------------
    Median:  3.398E-006   Upper Tolerance:  1.109E-005   Aggregation Type: 1
    Mean  :  2.854E-006   Error Factor   :  3.265E+000

 ----------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------
    Number of Failures    :       1         Number of Components  : ------
    Hours Per Component   : ------------    Demand Per Component  : --------
    Total Component Hours:       350400     Total Component Demand: --------

    Probability/Rate   :  4.410E-006        Type         : MEAN
    Variance           :  1.170E-011        Units        : F/H
    Standard Deviation : ------E----        Distribution : GAMMA

                         ---Lower---      ---Upper---    -Confidence/Coverage-
    Confidence Bounds  : ------E----      ------E----               -- %
    Tolerance Bounds   : ------E----      ------E----               -- %
          Error Factor : ------E----         Sided                  -- %

 ----------------------------------------------------------------------------
  Component          1: Voltage level Unknown (Unknown VAC/VDC)
  Applications       2:
                     3:
 ----------------------------------------------------------------------------
                 Origin                       Record Type
  Failure Data :  PLNT      UTDB-LERS-INCD-MOPR-   -    -    -    -    -
  Exposure Data:  PLNT      SSLB-SURV-JOBO-   -    -    -    -    -    -

  Data Collection Period:  74 through 83 (YY through YY)

  Include Circuit? : U          Originating Facilities : HNP1-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I  Systems : EE-  -  -  -
  Safety Grade?    : N
  Primary Failure? : U     Subsys. train :

 ------------------------------ REFERENCE INFORMATION -----------------------
     Document Number : 20585        Detail Reference : 4.1-5,11
 ------------------------------ ADDITIONAL COMMENTS -------------------------


 ----------------------------------------------------------------------------
```

```
             ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/02/03

       Component: Power Electronics (Solid-state)
          Design: Inverter (except motor controllers)
    Normal State: Normally Energized
    Failure Mode: Fails to Operate                       Data Record Number:   5

 ------------------------NUCLARR-CALCULATED-RATES------------------------------
      Median: 3.900E-006   Upper Tolarance:  1.347E-005   Aggregation Type: 5
      Mean  : 5.180E-006   Error Factor   :  3.453E+000

 ------------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
      Number of Failures   : ------       Number of Components   : ------
      Hours Per Component  : ------------ Demand Per Component   : --------
      Total Component Hours: ------------ Total Component Demand: --------

      Probability/Rate   :  3.900E-006    Type         : MEDIAN
      Variance           : ------E----    Units        : F/H
      Standard Deviation : ------E----    Distribution : OTHER

                           ---Lower---    ---Upper---   -Confidence/Coverage-
      Confidence Bounds  : ------E----    ------E----            -- %
      Tolerance Bounds   :  2.500E-007     4.000E-005            60 %
            Error Factor : ------E----       Sided               -- %

 -------------------------------------------------------------------------------
    Component            1: Unknown Instrumentation
    Applications         2: Voltage level Unknown (Unknown VAC/VDC)
                         3:
 -------------------------------------------------------------------------------
                  Origin                        Record Type
    Failure Data :  OTHR          -    -    -    -    -    -    -    -    -
    Exposure Data:                -    -    -    -    -    -    -    -    -

    Data Collection Period:      through 77 (YY through YY)

    Include Circuit? :          Originating Facilities :    -    -    -
    Nuclear Origin?  :          Failure Degree   :
    Bayesian Update? : N        Failure Severity : C
    IRADAP Suitable? : U        Include System?  :     Systems :   -   -   -   -
    Safety Grade?    :
    Primary Failure? :       Subsys. train :

 ---------------------------- REFERENCE INFORMATION ----------------------------
      Document Number :  5383        Detail Reference : 277

 ---------------------------- ADDITIONAL COMMENTS ------------------------------
    OTHR - SEE SUPP.REF.  3-phase static inverter; fails to transfer.

 -------------------------------------------------------------------------------
```

```
         ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/02/03

     Component: Power Electronics (Solid-state)
        Design: Inverter (except motor controllers)
  Normal State: Normally Energized
  Failure Mode: Fails to Operate                    Data Record Number:   6

------------------------------NUCLARR-CALCULATED-RATES------------------------------
   Median:  1.370E-006   Upper Tolerance:  5.069E-006   Aggregation Type: 5
   Mean  :  1.880E-006   Error Factor   :  3.700E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
   Number of Failures    : ------        Number of Components  : ------
   Hours Per Component   : ------------  Demand Per Component  : --------
   Total Component Hours: ------------   Total Component Demand: --------

   Probability/Rate    :  1.370E-006     Type         : MEDIAN
   Variance            : ------E----     Units        : F/H
   Standard Deviation : ------E----      Distribution : OTHER

                         ----Lower----   ----Upper----   -Confidence/Coverage-
   Confidence Bounds   : ------E----     ------E----              -- %
   Tolerance Bounds    :  4.000E-007      1.600E-005              60 %
         Error Factor : ------E----        Sided                  -- %

------------------------------------------------------------------------------------
  Component           1: Voltage level Unknown (Unknown VAC/VDC)
  Applications        2:
                      3:
------------------------------------------------------------------------------------
                 Origin                        Record Type
  Failure Data :  OTHR            -   -   -   -   -   -   -   -   -
  Exposure Data:                  -   -   -   -   -   -   -   -   -

  Data Collection Period:     through 77 (YY through YY)

  Include Circuit? :           Originating Facilities :     -   -   -
  Nuclear Origin?  :           Failure Degree    :
  Bayesian Update? : N         Failure Severity : C
  IRADAP Suitable? : U         Include System?   :    Systems :   -  -  -  -
  Safety Grade?    :
  Primary Failure? :       Subsys. train :

-------------------------- REFERENCE INFORMATION --------------------------
   Document Number :  5383        Detail Reference : 276

--------------------------- ADDITIONAL COMMENTS ---------------------------
  OTHR - SEE SUPP.REF.  1-phase static inverter; fails to transfer.

------------------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/02/03

```
    Component: Power Electronics (Solid-state)
       Design: Inverter (except motor controllers)
 Normal State: Normally Energized
 Failure Mode: Fails to Operate                         Data Record Number:   7

-------------------------------NUCLARR-CALCULATED-RATES-------------------------------
   Median:  3.000E-006   Upper Tolerance:  1.022E-005   Aggregation Type: 5
   Mean  :  3.960E-006   Error Factor   :  3.407E+000

------------------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
   Number of Failures   : ------         Number of Components  : ------
   Hours Per Component  : ------------   Demand Per Component  : --------
   Total Component Hours: ------------   Total Component Demand: --------

   Probability/Rate   :  3.000E-006      Type         : MEDIAN
   Variance           : ------E----      Units        : F/H
   Standard Deviation : ------E----      Distribution : OTHER

                        ----Lower----    ----Upper----   -Confidence/Coverage-
   Confidence Bounds  : ------E----      ------E----              -- %
   Tolerance Bounds   :  1.900E-007       3.000E-005              60 %
         Error Factor : ------E----         Sided                 -- %

--------------------------------------------------------------------------------------
 Component          1: Voltage level Unknown (Unknown VAC/VDC)
 Applications       2:
                    3:
--------------------------------------------------------------------------------------
                Origin                          Record Type
 Failure Data :  OTHR             -   -   -   -   -   -   -   -   -
 Exposure Data:                   -   -   -   -   -   -   -   -   -

 Data Collection Period:     through 77 (YY through YY)

 Include Circuit? :          Originating Facilities :    -   -   -
 Nuclear Origin?  :          Failure Degree    :
 Bayesian Update? : N        Failure Severity : C
 IRADAP Suitable? : U        Include System?  :    Systems :   -  -  -  -
 Safety Grade?    :
 Primary Failure? :       Subsys. train :

--------------------------- REFERENCE INFORMATION ------------------------------------
   Document Number :  5383        Detail Reference : 277

-------------------------- ADDITIONAL COMMENTS ---------------------------------------
 OTHR - SEE SUPP.REF.  3-phase static inverter; no output.
--------------------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/02/03

Component: Power Electronics (Solid-state)
Design: Unknown
Normal State: Normally Energized
Failure Mode: Fails to Operate

Data Record Number: 1

NUCLARR-CALCULATED-RATES

Median: 2.870E-006	Upper Tolerance: 3.466E-006	Aggregation Type: 5
Mean : 2.889E-006	Error Factor : 1.208E+000	

REFERENCE-RAW-and-PROBABILITY-DATA

Number of Failures : ------	Number of Components : ------
Hours Per Component : ------------	Demand Per Component : --------
Total Component Hours: ------------	Total Component Demand: --------

Probability/Rate : 2.870E-006	Type : MEDIAN
Variance : +0.000E+000	Units : F/H
Standard Deviation : ------E----	Distribution : OTHER

	Lower	Upper	-Confidence/Coverage-
Confidence Bounds	------E----	------E----	-- %
Tolerance Bounds	5.000E-008	4.090E-006	60 %
Error Factor	------E----	Sided	-- %

Component Applications
1: Voltage level Unknown - DC
2: Unknown Instrumentation
3:

	Origin	Record Type
Failure Data :	OTHR	- - - - - - - - -
Exposure Data:		- - - - - - - - -

Data Collection Period: through 77 (YY through YY)

Include Circuit? :	Originating Facilities : - - -
Nuclear Origin? :	Failure Degree :
Bayesian Update? : N	Failure Severity : C
IRADAP Suitable? : U	Include System? : Systems : - - - -
Safety Grade? :	
Primary Failure? :	Subsys. train :

REFERENCE INFORMATION

Document Number : 5383 Detail Reference : 660

ADDITIONAL COMMENTS

OTHR - SEE SUPP.REF. No output (49%), failed to regulate (49%), excessive output (2%).

```
           ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Transformers, Control and Instrumentation
        Design: Differential/Regulating
  Normal State: Normally Energized
  Failure Mode: Fails to Operate                         Data Record Number:   1

 ------------------------NUCLARR-CALCULATED-RATES-----------------------------
    Median:  4.879E-006   Upper Tolerance:  3.886E-005   Aggregation Type: 1
    Mean  : +0.000E+000   Error Factor   :  7.964E+000

 ---------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------------
    Number of Failures    :       0        Number of Components    : ------
    Hours Per Component   : ------------   Demand Per Component    : --------
    Total Component Hours:          48213  Total Component Demand: --------

    Probability/Rate    :  1.000E-006      Type          : MEDIAN
    Variance            :  1.500E-011      Units         : F/H
    Standard Deviation : ------E----       Distribution : DISCRETE

                         ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----                -- %
    Tolerance Bounds    :  4.400E-009      4.200E-006                 90 %
          Error Factor : ------E----         Sided                    -- %

 -----------------------------------------------------------------------------
  Component          1: < 125 VAC (single voltage)
  Applications       2: Unknown Instrumentation
                     3: Unknown Instrumentation Type
 -----------------------------------------------------------------------------
                  Origin                         Record Type
  Failure Data :   PLNT       PMWR-LERS-INCD-    -    -    -    -    -    -
  Exposure Data:   PLNT       TSTR-PMTR-CRLB-    -    -    -    -    -    -

  Data Collection Period:  75 through 80 (YY through YY)

  Include Circuit? : U          Originating Facilities : NEE3-    -    -
  Nuclear Origin?  : Y          Failure Degree    :
  Bayesian Update? : Y          Failure Severity : C
  IRADAP Suitable? : Y          Include System?  : I   Systems : EC-  -  -  -
  Safety Grade?    : U
  Primary Failure? : U     Subsys. train :

 ------------------------- REFERENCE INFORMATION -----------------------------
     Document Number : 21281        Detail Reference : 5-22

 -------------------------- ADDITIONAL COMMENTS ------------------------------
  MEAN = 2.00E-06/H

 -----------------------------------------------------------------------------
```

```
         ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/02/03

   Component: Transformers, Control and Instrumentation
      Design: Unknown
Normal State: Normally Energized
Failure Mode: Fails to Operate                         Data Record Number:   1

------------------------------NUCLARR-CALCULATED-RATES-------------------------
  Median:  3.100E-007  Upper Tolerance:  5.369E-007  Aggregation Type: 5
  Mean  :  3.278E-007  Error Factor   :  1.732E+000

--------------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------
  Number of Failures   : ------          Number of Components  : ------
  Hours Per Component  : ------------    Demand Per Component  : --------
  Total Component Hours: ------------    Total Component Demand: --------

  Probability/Rate   :  3.100E-007       Type         : MEDIAN
  Variance           : ------E----       Units        : F/H
  Standard Deviation : ------E----       Distribution : OTHER

                      ----Lower----   ----Upper----  -Confidence/Coverage-
  Confidence Bounds  : ------E----     ------E----              -- %
  Tolerance Bounds   :  1.100E-007      8.700E-007              60 %
        Error Factor : ------E----        Sided                 -- %

-------------------------------------------------------------------------------
Component          1: Voltage level Unknown - AC
Applications       2: Unknown Instrumentation
                   3:
-------------------------------------------------------------------------------
                 Origin                        Record Type
Failure Data :   OTHR       OTHR-   -   -   -   -   -   -   -   -
Exposure Data:                  -   -   -   -   -   -   -   -   -

Data Collection Period:      through 77 (YY through YY)

Include Circuit? :           Originating Facilities :     -    -    -
Nuclear Origin?  :           Failure Degree   :
Bayesian Update? : N         Failure Severity : C
IRADAP Suitable? : U         Include System?  :    Systems :    -   -   -   -
Safety Grade?    :
Primary Failure? :       Subsys. train :
----------------------------- REFERENCE INFORMATION ---------------------------
   Document Number :  5383       Detail Reference : 413
------------------------------ ADDITIONAL COMMENTS ----------------------------
OTHR - SEE SUPP.REF. Potentil and current transformers. No output; 81% due
to shorts and 19% to open circuits.
-------------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/02/03

```
   Component: Transformers, Power
      Design: Liquid-cooled
Normal State: Normally Energized
Failure Mode: Fails to Operate                         Data Record Number:   1

-------------------------------NUCLARR-CALCULATED-RATES------------------------------
  Median:  1.100E-007   Upper Tolerance:  3.184E-007   Aggregation Type: 5
  Mean  :  1.355E-007   Error Factor   :  2.895E+000

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA--------------------------
  Number of Failures    : ------          Number of Components   : ------
  Hours Per Component   : ------------    Demand Per Component   : --------
  Total Component Hours: ------------     Total Component Demand: --------

  Probability/Rate    :  1.100E-007       Type         : MEDIAN
  Variance            : ------E----       Units        : F/H
  Standard Deviation  : ------E----       Distribution : OTHER

                        ----Lower----    ----Upper----   -Confidence/Coverage-
  Confidence Bounds   : ------E----      ------E----              -- %
  Tolerance Bounds    :  5.400E-008       8.100E-007              60 %
        Error Factor  : ------E----         Sided                 -- %

-------------------------------------------------------------------------------------
Component           1: Voltage level Unknown - AC
Applications        2:
                    3:
-------------------------------------------------------------------------------------
                 Origin                        Record Type
Failure Data :    OTHR       OTHR-   -    -    -    -    -    -    -    -
Exposure Data:                    -   -    -    -    -    -    -    -    -

Data Collection Period:      through 77 (YY through YY)

Include Circuit? : Y         Originating Facilities :      -    -    -
Nuclear Origin?  :           Failure Degree   :
Bayesian Update? : N         Failure Severity : C
IRADAP Suitable? : U         Include System?  :     Systems :    -   -   -   -
Safety Grade?    :
Primary Failure? : N     Subsys. train :
----------------------------------- REFERENCE INFORMATION ---------------------------
  Document Number :  5383        Detail Reference : 322
------------------------------------ ADDITIONAL COMMENTS ----------------------------
OTHR - SEE SUPP.REF. Liquid-filled 3-phase OV-40KV. 76% removal by protective
circuitry, 16% delayed (manual) removal, 7% open circuit.
-------------------------------------------------------------------------------------
```

```
      ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

   Component: Transformers, Power
      Design: Unknown
Normal State: Normally Energized
Failure Mode: Fails to Operate                  Data Record Number:   1

------------------------NUCLARR-CALCULATED-RATES------------------------
  Median:  2.872E-006   Upper Tolerance:  2.287E-005   Aggregation Type: 1
  Mean   : +0.000E+000  Error Factor    :  7.964E+000

---------------------REFERENCE-RAW-and-PROBABILITY-DATA----------------
  Number of Failures    :       0        Number of Components  : ------
  Hours Per Component   : ------------   Demand Per Component  : --------
  Total Component Hours:         81900   Total Component Demand: --------

  Probability/Rate    :  7.900E-007      Type         : MEDIAN
  Variance            :  2.400E-012      Units        : F/H
  Standard Deviation : ------E----       Distribution : DISCRETE

                       ----Lower----   ----Upper----  -Confidence/Coverage-
  Confidence Bounds   : -------E----    -------E----               -- %
  Tolerance Bounds    :  1.500E-007      3.500E-006                90 %
        Error Factor : ------E----          Sided                  -- %

-----------------------------------------------------------------------
Component          1: Voltage level Unknown - AC
Applications       2:
                   3:
-----------------------------------------------------------------------
                Origin                        Record Type
Failure Data :   PLNT      PMWR-LERS-INCD-    -   -   -   -   -   -
Exposure Data:   PLNT      TSTR-PMTR-CRLB-    -   -   -   -   -   -

Data Collection Period:  75 through 80 (YY through YY)

Include Circuit? : U        Originating Facilities : NEE3-    -    -
Nuclear Origin?  : Y        Failure Degree    :
Bayesian Update? : Y        Failure Severity : C
IRADAP Suitable? : Y        Include System?  : I  Systems : EA-  -  -  -
Safety Grade?    : U
Primary Failure? : U     Subsys. train :

------------------------- REFERENCE INFORMATION -------------------------
   Document Number : 21281       Detail Reference : 5-23

-------------------------- ADDITIONAL COMMENTS --------------------------
MEAN = 1.40E-06/H

-----------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

```
   Component: Transformers, Power
      Design: Unknown
Normal State: Normally Energized
Failure Mode: Fails to Operate                      Data Record Number:   2

-------------------------NUCLARR-CALCULATED-RATES-----------------------------
  Median:  5.421E-007  Upper Tolerance:  4.317E-006  Aggregation Type: 1
  Mean  : +0.000E+000  Error Factor   :  7.964E+000

-----------------------REFERENCE-RAW-and-PROBABILITY-DATA---------------------
  Number of Failures    :       0       Number of Components   : ------
  Hours Per Component   : ------------  Demand Per Component   : --------
  Total Component Hours:        434000  Total Component Demand: --------

  Probability/Rate   :  2.100E-007      Type         : MEDIAN
  Variance           :  3.600E-013      Units        : F/H
  Standard Deviation : ------E----      Distribution : DISCRETE

                      ---Lower---     ---Upper---   -Confidence/Coverage-
  Confidence Bounds  : ------E----     ------E----              -- %
  Tolerance Bounds   :  1.200E-008      1.200E-006              90 %
        Error Factor : ------E----        Sided                 -- %

------------------------------------------------------------------------------
Component         1: 600 VAC - 4.74 kVAC (single voltage)
Applications      2:
                  3:
------------------------------------------------------------------------------
                Origin                           Record Type
Failure Data :   PLNT        PMWR-LERS-INCD-   -    -    -    -    -    -
Exposure Data:   PLNT        TSTR-PMTR-CRLB-   -    -    -    -    -    -

Data Collection Period:  75 through 80 (YY through YY)

Include Circuit? : U        Originating Facilities : NEE3-    -    -
Nuclear Origin?  : Y        Failure Degree    :
Bayesian Update? : Y        Failure Severity : C
IRADAP Suitable? : Y        Include System?  : I  Systems : EA-  -  -  -
Safety Grade?    : U
Primary Failure? : U    Subsys. train :

--------------------------- REFERENCE INFORMATION ----------------------------
  Document Number : 21281       Detail Reference : 5-23

---------------------------- ADDITIONAL COMMENTS -----------------------------
MEAN = 4.80E-07/H

------------------------------------------------------------------------------
```

```
         ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

     Component: Transformers, Power
        Design: Unknown
  Normal State: Normally Energized
  Failure Mode: Fails to Operate                       Data Record Number:   3

--------------------------NUCLARR-CALCULATED-RATES-----------------------------
   Median:  2.869E-007   Upper Tolerance:  2.285E-006   Aggregation Type: 1
   Mean  : +0.000E+000   Error Factor   :  7.964E+000

--------------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------
   Number of Failures   :       0        Number of Components  : ------
   Hours Per Component  : ------------   Demand Per Component  : --------
   Total Component Hours:        820000  Total Component Demand: --------

   Probability/Rate   :  1.000E-007      Type         : MEDIAN
   Variance           :  1.600E-013      Units        : F/H
   Standard Deviation : ------E----      Distribution : DISCRETE

                       ----Lower----   ----Upper----  -Confidence/Coverage-
   Confidence Bounds  : ------E----     ------E----              -- %
   Tolerance Bounds   :  5.700E-009      7.800E-007              90 %
         Error Factor : ------E----        Sided                 -- %

-------------------------------------------------------------------------------
  Component          1: 125 - 599 VAC (voltage range)
  Applications       2:
                     3:
-------------------------------------------------------------------------------
                 Origin                      Record Type
  Failure Data :  PLNT       PWWR-LERS-INCD-   -    -    -    -    -    -
  Exposure Data:  PLNT       TSTR-PMTR-CRLB-   -    -    -    -    -    -

  Data Collection Period:  75 through 80 (YY through YY)

  Include Circuit? : U         Originating Facilities : NEE3-    -    -
  Nuclear Origin?  : Y         Failure Degree     :
  Bayesian Update? : Y         Failure Severity : C
  IRADAP Suitable? : Y         Include System?  : I  Systems : EC-  -  -  -
  Safety Grade?    : U
  Primary Failure? : U     Subsys. train :

------------------------------ REFERENCE INFORMATION --------------------------
    Document Number : 21281        Detail Reference : 5-23

------------------------------ ADDITIONAL COMMENTS ----------------------------
  MEAN = 3.10E-07/H

-------------------------------------------------------------------------------
```

ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

```
    Component: Transformers, Power
       Design: Unknown
 Normal State: Normally Energized
 Failure Mode: Fails to Operate                          Data Record Number:   4

------------------------NUCLARR-CALCULATED-RATES---------------------------------
   Median:  3.917E-006   Upper Tolerance:  1.279E-005   Aggregation Type: 1
   Mean  :  3.289E-006   Error Factor   :  3.265E+000

----------------------REFERENCE-RAW-and-PROBABILITY-DATA-------------------------
   Number of Failures   :      1          Number of Components   : ------
   Hours Per Component  : ------------    Demand Per Component   : --------
   Total Component Hours:      304000     Total Component Demand: --------

   Probability/Rate    :  1.730E-006      Type          : MEAN
   Variance            :  3.170E-012      Units         : F/H
   Standard Deviation  : ------E----      Distribution  : DISCRETE

                         ---Lower---      ---Upper---    -Confidence/Coverage-
   Confidence Bounds   : ------E----      ------E----              -- %
   Tolerance Bounds    : ------E----      ------E----              -- %
         Error Factor  : ------E----         Sided                 -- %

---------------------------------------------------------------------------------
 Component            1: Voltage level Unknown - AC
 Applications         2:
                      3:
---------------------------------------------------------------------------------
                 Origin                    Record Type
 Failure Data :   PLNT       LERS-CRLB-PMLG-PMTR-DEVR-    -    -    -    -
 Exposure Data:   PLNT       MOPR-TSTR-   -    -    -    -    -    -    -    -

 Data Collection Period:  73 through 79 (YY through YY)

 Include Circuit? : U         Originating Facilities : ZIS1-ZIS2-    -
 Nuclear Origin?  : Y         Failure Degree     :
 Bayesian Update? : Y         Failure Severity : C
 IRADAP Suitable? : Y         Include System?  : I   Systems : EC-  -  -  -
 Safety Grade?    : N
 Primary Failure? : U     Subsys. train :

---------------------------- REFERENCE INFORMATION ------------------------------
   Document Number : 21381        Detail Reference : 1.5-75

----------------------------- ADDITIONAL COMMENTS -------------------------------

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```
         ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/02/03

     Component: Transformers, Power
        Design: Unknown
  Normal State: Normally Energized
  Failure Mode: Fails to Operate                      Data Record Number:   5

-----------------------------NUCLARR-CALCULATED-RATES-----------------------------
    Median:  1.210E-006   Upper Tolerance: ------E----   Aggregation Type: 6
    Mean   : ------E----  Error Factor    : ------E----

-------------------------REFERENCE-RAW-and-PROBABILITY-DATA-----------------------
    Number of Failures    : ------          Number of Components  : ------
    Hours Per Component   : ------------    Demand Per Component  : --------
    Total Component Hours: ------------     Total Component Demand: --------

    Probability/Rate    :  1.210E-006       Type          : MEDIAN
    Variance            : ------E----       Units         : F/H
    Standard Deviation  : ------E----       Distribution  : OTHER

                         ----Lower----    ----Upper----   -Confidence/Coverage-
    Confidence Bounds   : ------E----      ------E----               -- %
    Tolerance Bounds    : ------E----      ------E----               -- %
          Error Factor  : ------E----         Sided                  -- %

----------------------------------------------------------------------------------
  Component           1: 250 VAC - 4.74 kVAC (voltage range)
  Applications        2:
                      3:
----------------------------------------------------------------------------------
                  Origin                           Record Type
  Failure Data :  OTHR        OTHR-   -    -    -    -    -    -    -    -
  Exposure Data:                      -    -    -    -    -    -    -    -    -

  Data Collection Period:     through 73 (YY through YY)

  Include Circuit? :            Originating Facilities :      -    -    -
  Nuclear Origin?  : N          Failure Degree    :
  Bayesian Update? :            Failure Severity : C
  IRADAP Suitable? : U          Include System?  :    Systems :    -   -   -   -
  Safety Grade?    :
  Primary Failure? :       Subsys. train :

------------------------------ REFERENCE INFORMATION ------------------------------
     Document Number :  5383        Detail Reference : 340

------------------------------- ADDITIONAL COMMENTS -------------------------------
  OTHR - SEE SUPP.REF. Power transf., 150k VA, 4160-480y/277 VAC, 3-phase.

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            ELECTRICAL COMPONENT FAILURE SOURCE DATA ENTERED 1988/01/29

      Component: Transformers, Power
         Design: Other
   Normal State: Normally Energized
   Failure Mode: Fails to Operate                        Data Record Number:   1

-------------------------------NUCLARR CALCULATED RATES------------------------------
     Median:  1.272E-006   Upper Tolerance:  1.013E-005   Aggregation Type: 1
     Mean  : +0.000E+000   Error Factor   :  7.964E+000

--------------------------REFERENCE RAW and PROBABILITY DATA--------------------------
     Number of Failures    :      0          Number of Components  : ------
     Hours Per Component   : ------------    Demand Per Component  : --------
     Total Component Hours:        185000    Total Component Demand: --------

     Probability/Rate     :  7.630E-007      Type         : MEAN
     Variance             :  1.140E-012      Units        : F/H
     Standard Deviation : ------E----        Distribution : DISCRETE

                           ----Lower----    ----Upper----   -Confidence/Coverage-
     Confidence Bounds   : ------E----      ------E----              -- %
     Tolerance Bounds    : ------E----      ------E----              -- %
           Error Factor  : ------E----         Sided                 -- %

--------------------------------------------------------------------------------------
   Component            1: Voltage level Unknown - AC
   Applications         2:
                        3:
--------------------------------------------------------------------------------------
                  Origin                          Record Type
   Failure Data :  PLNT      LERS-CRLB-PHLG-PMTR-SOCR-    -    -    -    -
   Exposure Data:  PLNT      MOPR-TSTR-   -    -    -    -    -    -    -    -

   Data Collection Period:  73 through 79 (YY through YY)

   Include Circuit? : U          Originating Facilities : IPS2-    -    -
   Nuclear Origin?  : Y          Failure Degree    :
   Bayesian Update? : Y          Failure Severity  : C
   IRADAP Suitable? : Y          Include System?   : I  Systems : EX-  -  -  -
   Safety Grade?    : U
   Primary Failure? : Y     Subsys. train :

------------------------------- REFERENCE INFORMATION --------------------------------
     Document Number : 20982        Detail Reference : 1.5-62

-------------------------------- ADDITIONAL COMMENTS ---------------------------------
   DRY TYPE, 3-PHASE TRANSFORMER

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NRC FORM 335
(2-84)
NRCM 1102
3201, 3202

U.S. NUCLEAR REGULATORY COMMISSION

BIBLIOGRAPHIC DATA SHEET

SEE INSTRUCTIONS ON THE REVERSE

1 REPORT NUMBER (Assigned by TIDC, add Vol. No., if any)
NUREG/CR-4639
EGG-2458
Volume 5

2 TITLE AND SUBTITLE
Nuclear Computerized Library for Assessing Reactor Reliability (NUCLARR)
Data Manual
Part 3: Hardware Component Failure Data (HCFD)

3 LEAVE BLANK

4 DATE REPORT COMPLETED

MONTH	YEAR
May	1988

5 AUTHOR(S)
David I. Gertman
B. Gay Gilbert
Walter E. Gilmore
William J. Galyean

6 DATE REPORT ISSUED

MONTH	YEAR
June	1988

7 PERFORMING ORGANIZATION NAME AND MAILING ADDRESS (Include Zip Code)
EG&G Idaho, Inc.
Idaho Falls, ID 83415

8 PROJECT/TASK/WORK UNIT NUMBER

9 FIN OR GRANT NUMBER
A6854

10 SPONSORING ORGANIZATION NAME AND MAILING ADDRESS (Include Zip Code)
Division of Reactor and Plant Systems
Office of Nuclear Regulatory Research
U.S. Nuclear Energy Commission
Washington, D. C. 20555

11a TYPE OF REPORT
Technical

b PERIOD COVERED (Inclusive dates)

12 SUPPLEMENTARY NOTES

13 ABSTRACT (200 words or less)

This volume of a five-volume series summarizes those data currently resident in the first release of the Nuclear Computerized Library for Assessing Reactor Reliability (NUCLARR) data base. The raw human error probability (HEP) and hardware component failure data (HCFD) contained herein are accompanied by a glossary of terms and the HEP and hardware taxonomies used to structure the data. Instructions are presented on how the user may navigate through the NUCLARR data management system to find anchor values to assist in solving risk-related problems.

Volume V: Data Manual will be updated on a periodic basis so that risk analysts without access to a computer may have access to the latest NUCLARR data. Those users wishing to learn more regarding the computer-based interactive search and report-generation capabilities of the NUCLARR system are referred to the other volumes in the NUREG/CR-4639 series, e.g., Volume I: Summary Description or Volume IV: User's Guide.

14 DOCUMENT ANALYSIS - a KEYWORDS/DESCRIPTORS
NUCLARR
computer code
human error probability (HEP)
hardware component failure data (HCFD)

b IDENTIFIERS/OPEN-ENDED TERMS

15 AVAILABILITY STATEMENT
Unlimited

16 SECURITY CLASSIFICATION
(This page)
Unclassified
(This report)
Unclassified

17 NUMBER OF PAGES

18 PRICE

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

SPECIAL FOURTH-CLASS RATE
POSTAGE & FEES PAID
USNRC

PERMIT No. G-67